

March 1946

TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



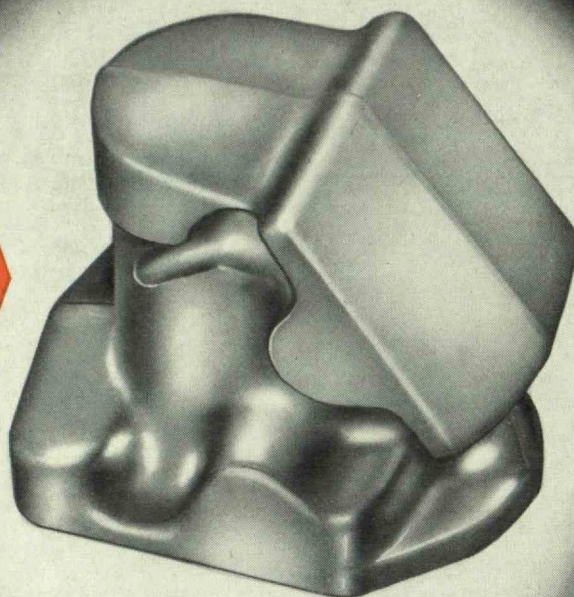
technology review

Published by MIT

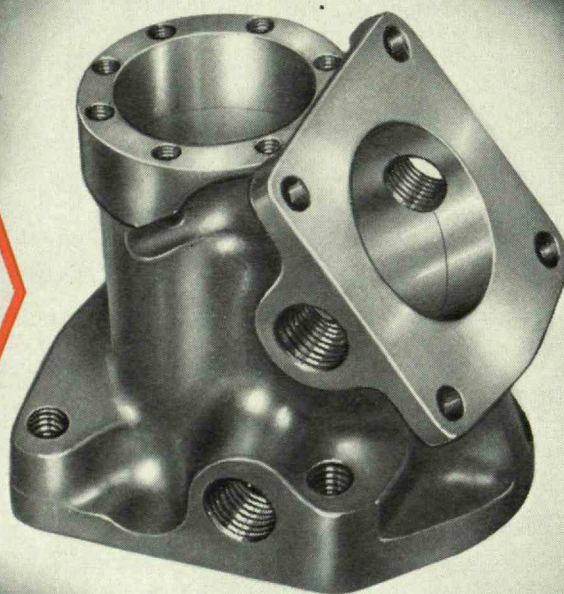
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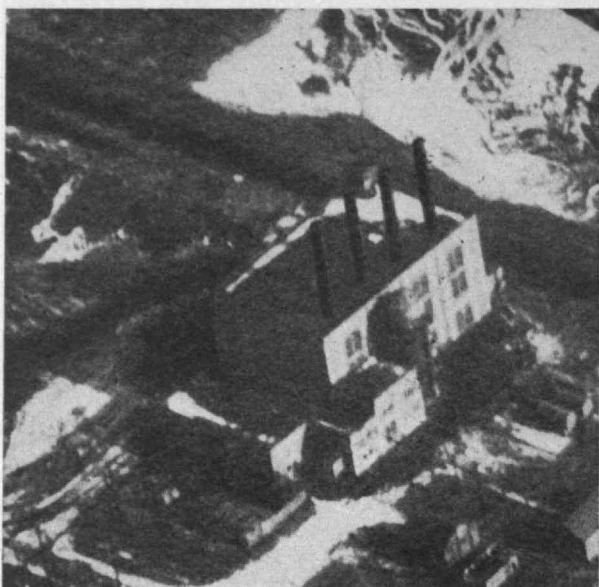
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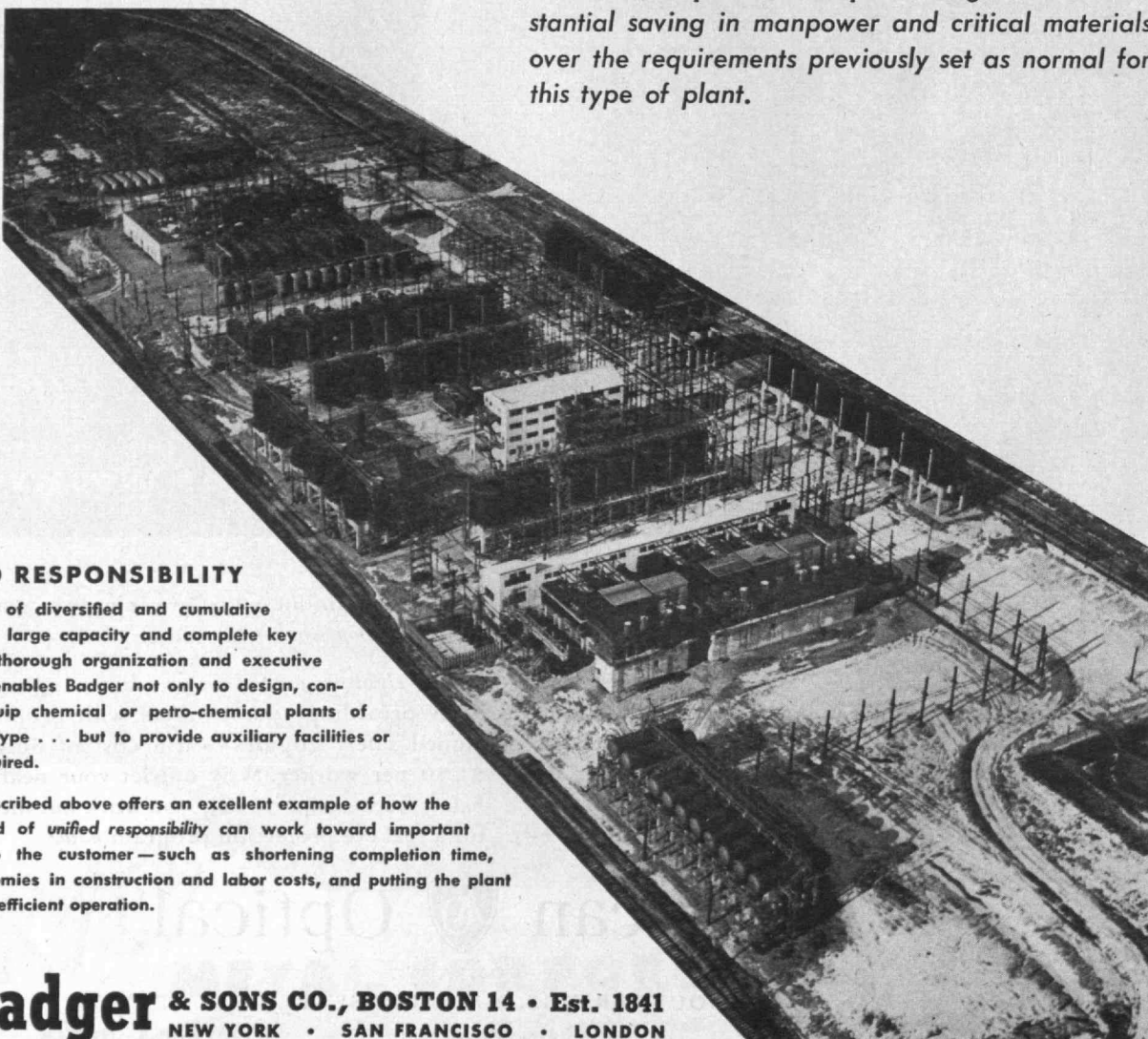


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wave... cool, shadowless light for operating rooms...

These, and the developments pictured on this page, are a few of the many contributions of General Electric engineers and research scientists toward helping those who help the sick. *General Electric Company, Schenectady, N. Y.*



Operations by electricity. Surgeons are now overcoming many difficulties in certain types of operations with electrosurgery. Among the advantages of electro-

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Helping fight TB. To quote the United States Public Health Service: "Tuberculosis can be eliminated as a public health problem in a measurable time if we use the x-ray to locate every case in the population... and if we provide adequate facilities and personnel to isolate and treat infectious cases." The cut-away picture above shows a mobile unit which can bring chest inspection facilities to schools, industrial plants, and outlying districts far from hospitals. For it, General Electric engineers have designed and built compact x-ray equipment so efficient that as many as 60 people per hour can be examined.

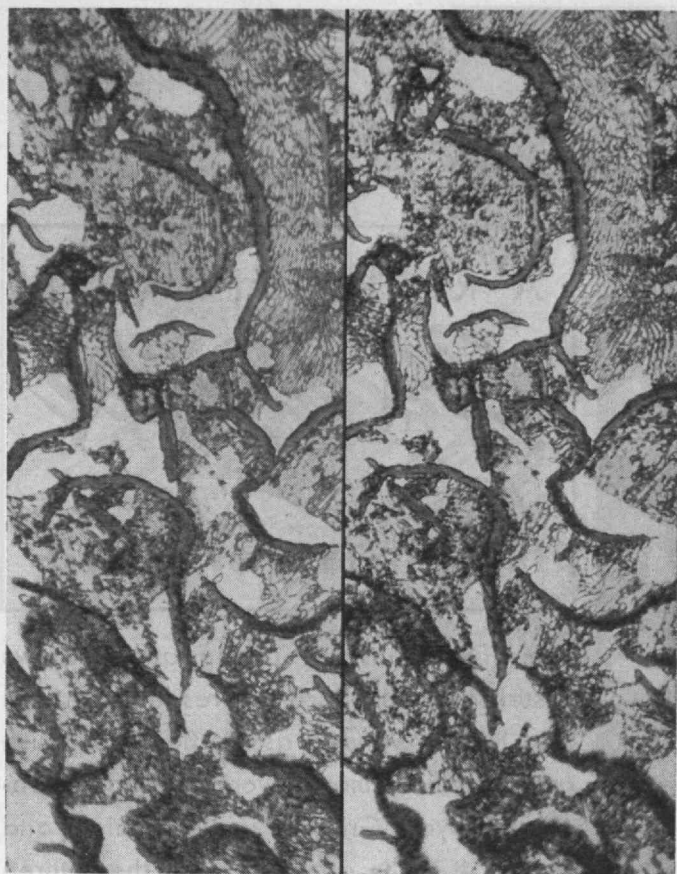


Machine-made fever. Fever heat helps nature's defensive organisms fight off some diseases. Under the leadership of Dr. W. R. Whitney in the General Electric Research Laboratory, G. E. developed inductotherm machines for hospitals and doctors to produce artificial fever electronically.

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Left Field, Taken with uncoated 4mm., 0.95 N.A. Apochromat — Flare 20%

Right Field, Taken with Balcoted 4mm., 0.95 N.A. Apochromat — Flare 4.9%

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OBJECTIVES

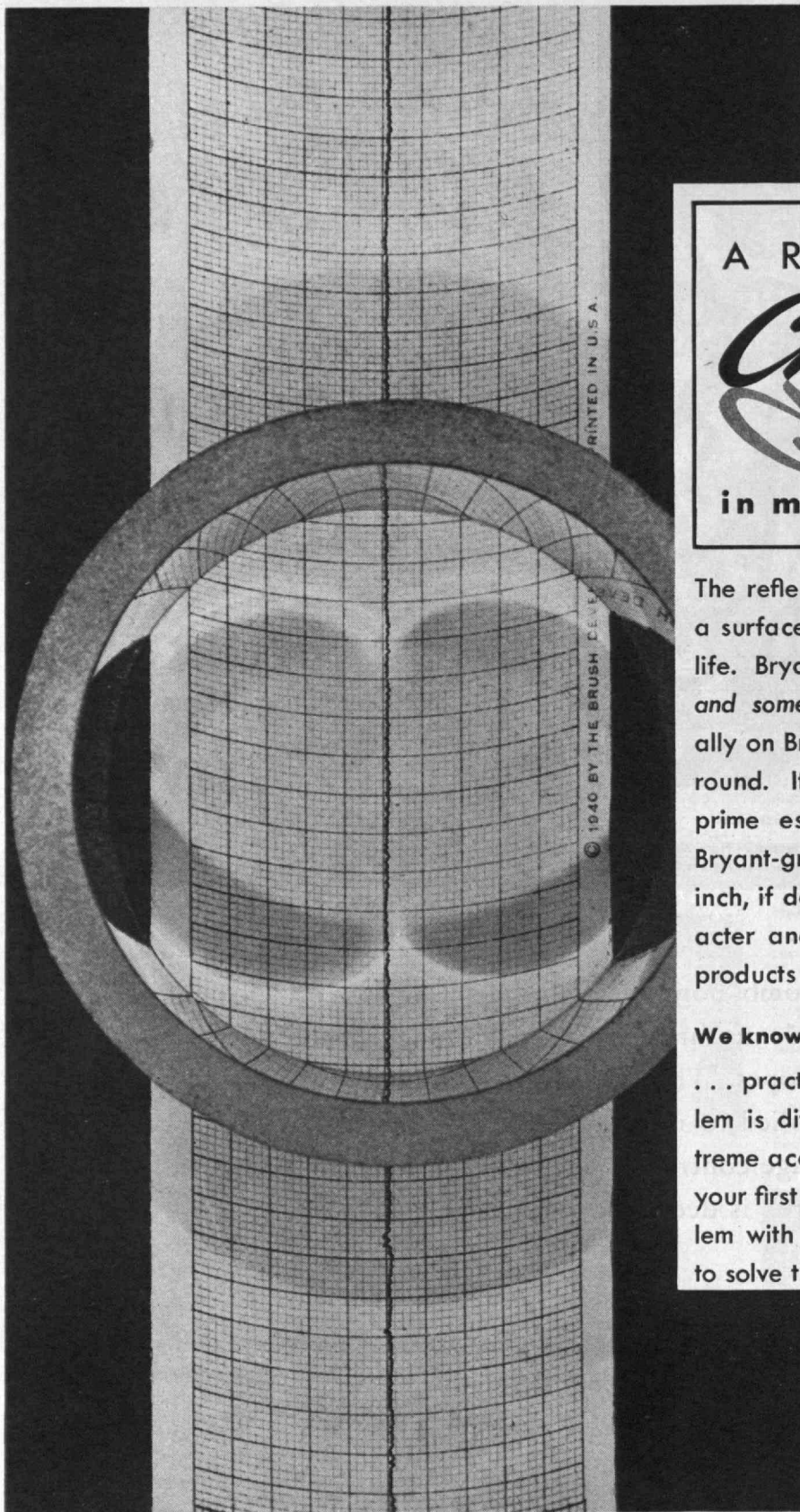
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in millionths of an inch

The reflection in the bushing, at left, shows a surface finish which assures long bearing life. Bryant Grinders assure fine work finish *and something more*—work ground internally on Bryant Grinders is also straight and round. It is the combination of these three prime essentials that gives character to Bryant-ground parts—in millionths of an inch, if desired. These essentials give character and long life to the assemblies and products which you manufacture.

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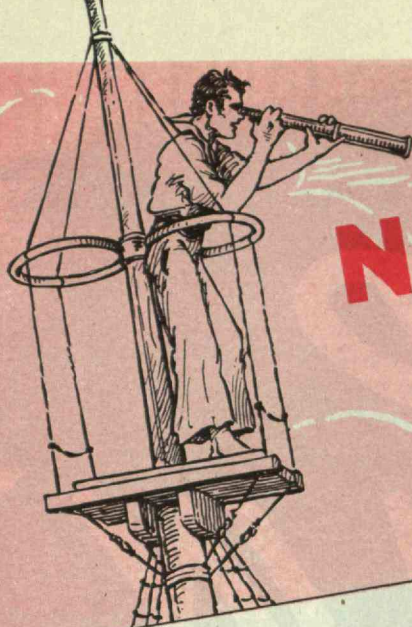
◀ This bushing, with hole ground in a Bryant Grinder, was checked for surface accuracy. The chart line shows deviation. Distance between vertical lines represents one-millionth of an inch.

BRYANT



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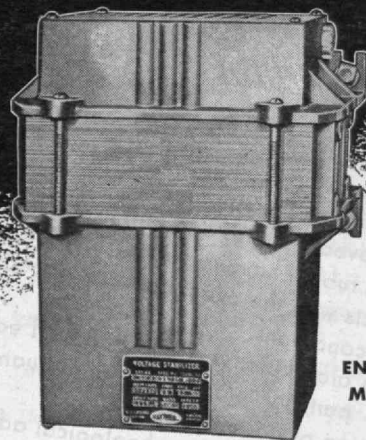
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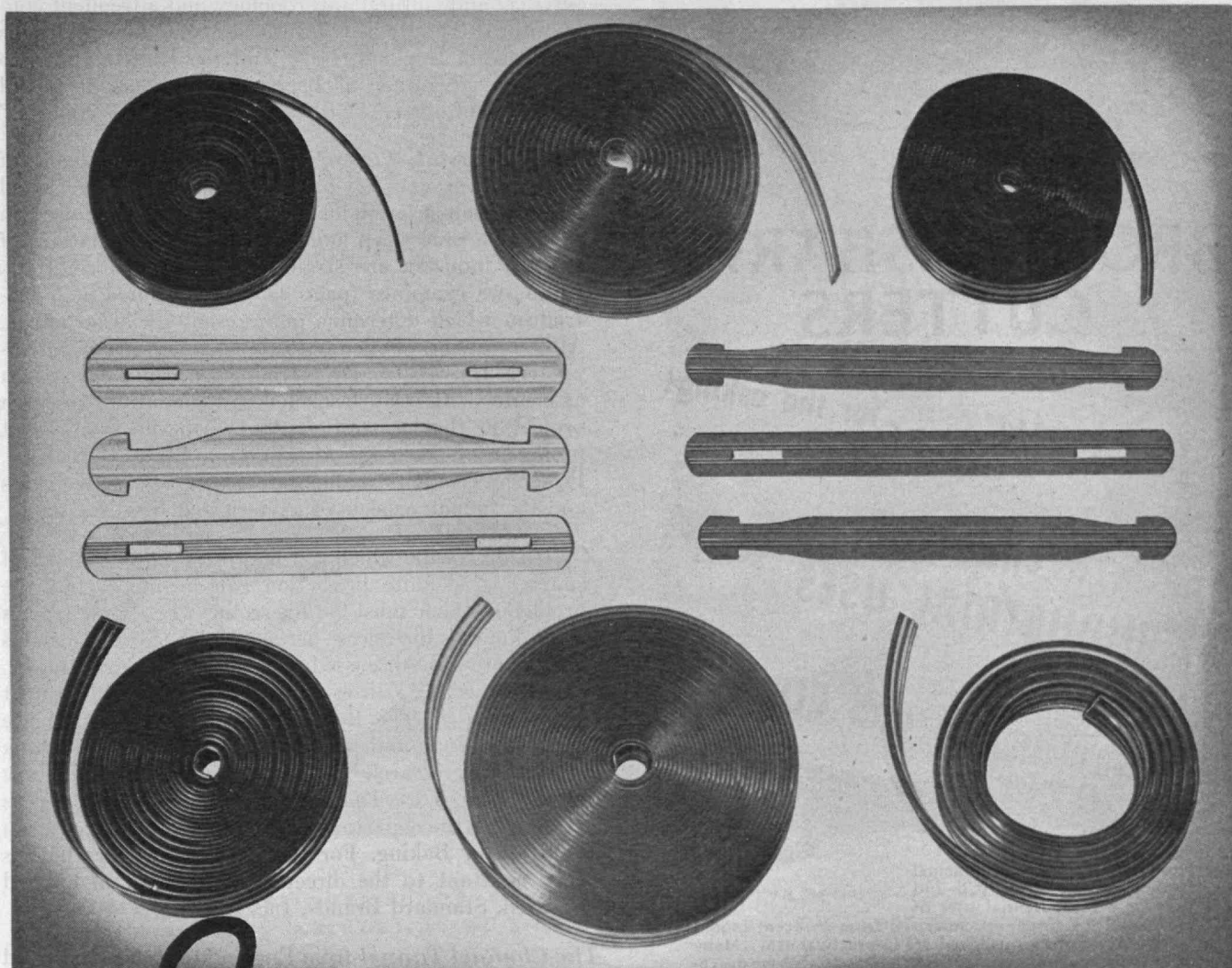
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THE TABULAR VIEW

Bryce Canyon, annually visited by a fair share of this nation's roving vacationists, is illustrated on the Table of Contents (page 277). Submitted with the modest inquiry of our interest in pictorial photographs were half a dozen excellent photographs from STANLEY WITT, who lists himself merely as a reader of *The Review*. In time, other of Mr. Witt's prints will make their way to these pages. To others who may ponder our interest in illustrations our reply is a definite affirmative.

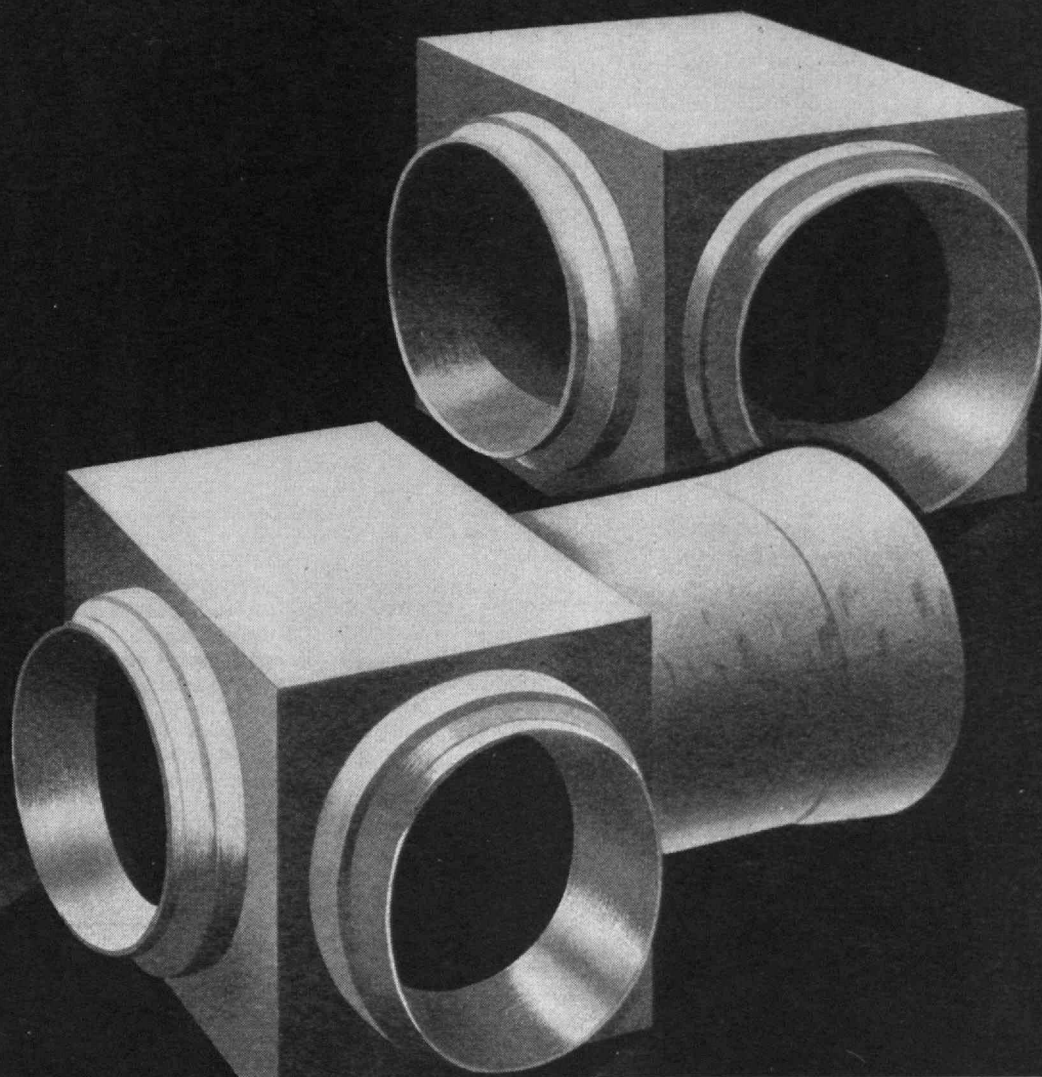
The American Family comes under the scrutiny (page 281) of M. F. ASHLEY MONTAGU, associate professor of anatomy at the Hahnemann Medical College and Hospital of Philadelphia. A thought-provoking writer on physical and cultural anthropology and a frequent contributor to *The Review*, Professor Montagu employs his residence in England, Italy, and the United States to excellent advantage as background for his delightful portrayal of our effort to "keep up with the Joneses."

The Industrial Way of Life, potentially capable of huge production of low-priced commodities, has exacted a heavy compensation for the benefits it has bestowed on man. At a time when human and economic relations of modern industry are strained as never before, PAUL MEADOWS examines (page 285) the features of industrialism which determine our present social structure. After receiving his doctorate in sociology from Northwestern University, Dr. Meadows became a research associate with the Rockefeller Foundation research project in the humanities. At present he is assistant professor of sociology at Montana State University. Professor Meadows' main interest is in social movements and the human aspects of modern industrialism.

Zenith or Nadir, which will man fully explore first? Of course, no definite prediction can be made, but the problems which must be overcome when man travels even limited distances perpendicular to the earth's surface are ably discussed (page 289) by FREDERIC W. NORDSIEK, '31, Editorial Associate of, and frequent contributor to, *The Review*. Following undergraduate work in biology and public health, Mr. Nordsiek took up duties as research bacteriologist, executive secretary of the New York Diabetes Association, and later as associate in the department of nutrition of the American Institute of Baking. For the past three years he has been assistant to the director, department of applied research, Standard Brands, Inc.

The Channel Tunnel from England to France has lived through 144 years of dogged proposals without coming to fulfillment or being definitely dropped as impractical. Brought to the fore when the need for transporting liquid fuel across the English Channel became acute during the war, this long planned engineering project is evaluated (page 293) by WILLY LEY, an Editorial Associate of *The Review* and research worker at the Washington Institute of Technology. Mr. Ley is a prolific writer on topics of engineering and scientific interest.

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MAIL RETURNS

Cover Discussion

FROM FRANCIS MARRAN, R.T.3C.:

We have been having quite a few arguments about the cover of the January Review. Perhaps you will be kind enough to settle the dispute for us.

The ship in the picture is obviously an "83-footer," which was probably on patrol somewhere off the coast. The title of the picture, "Through the Maelstrom," would indicate, however, that the ship was operating off the northwest coast of Norway, and to my knowledge no vessels of that type ever operated in that area. If you have any information which would indicate where and when the picture was taken, we would appreciate hearing from you.

% Fleet Post Office, New York, N. Y.

The cover shows a 63-footer (not an 83-footer as mentioned above) photographed during air-sea rescue tests conducted by the Coast Guard in the North Atlantic to determine which ships are best fitted for this type of duty. There is no information indicating in what part of the North Atlantic the photograph was taken. The photograph was released for publication on February 12, 1945. — Ed.

We Blush

FROM FREDERICK K. MORRIS:

The February number of The Review included a discussion of "The Age of the Earth," in which such serious divergencies from the author's text were made as to reverse the original meaning. I don't seek to place blame for these errors but only to correct them for the sake of your readers; and I beg for space and type for the most essential corrections.

The most serious error is in the last paragraph, page 252, beginning, "We conclude that the earth's history must be composed of three phases. . . ." I did not write these words which reverse the entire meaning of the essay. I won't quote them for fear of driving the error deeper. The correct statement follows: "To calculate the age of the earth we must add the recent 1,500,000,000 years of rock-record, plus a conjecturable billion years of unrecorded history, when the earth was essentially as cool, as wet, as hospitable as it is today, and then a long era of hot-earth years, including gaseous, molten, and warm-crust stages. The formula is indefinite, indeed, . . ." and thence continue as printed.

Other errors which no geologist would like to see under his signature should be noted as follows: (Concluded on page 310)

Speed with
Economy

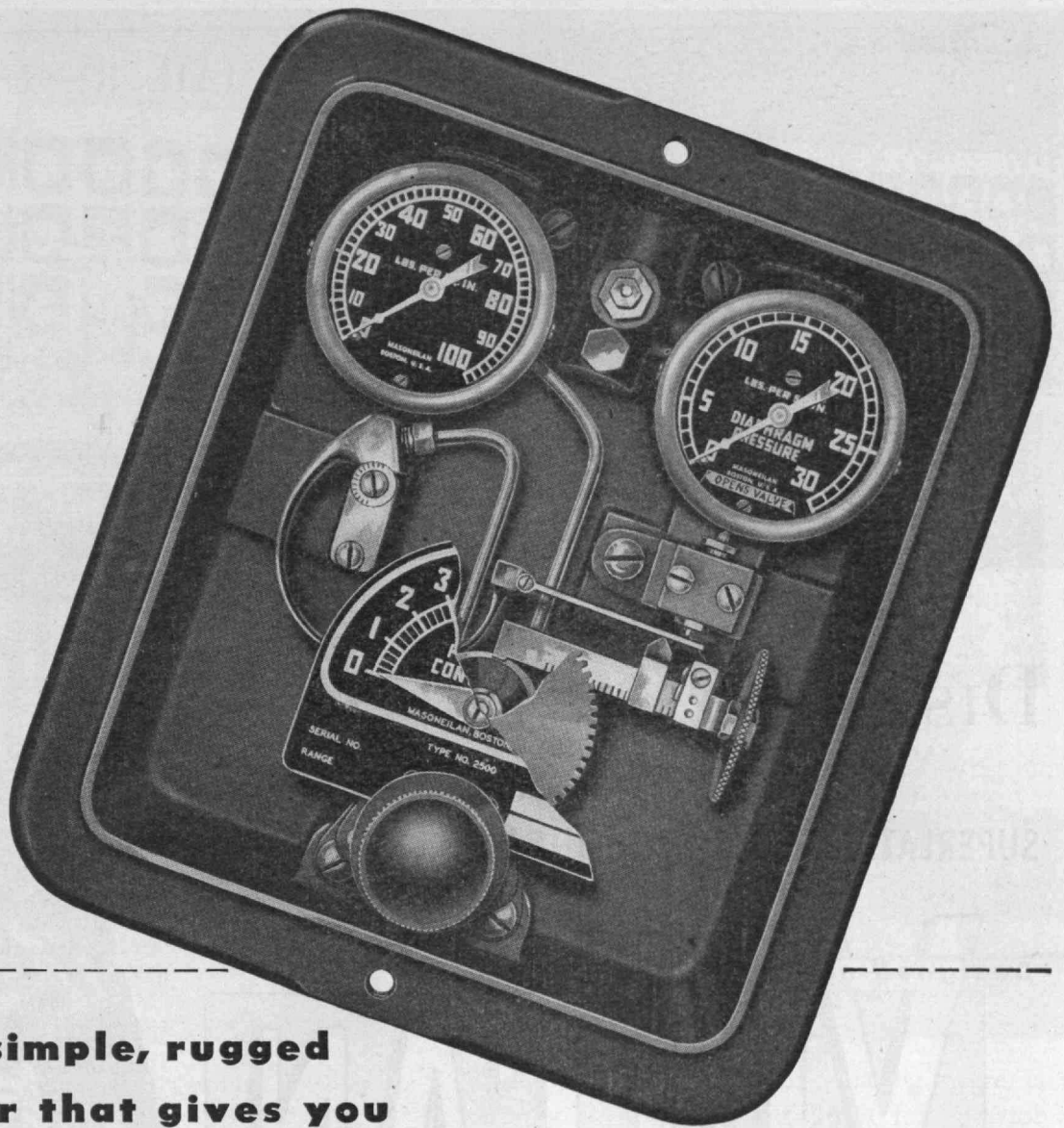


R. C. Williams & Co.

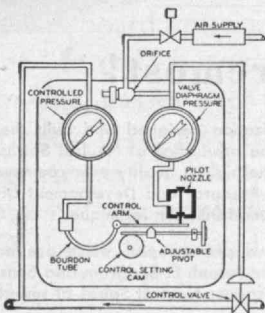
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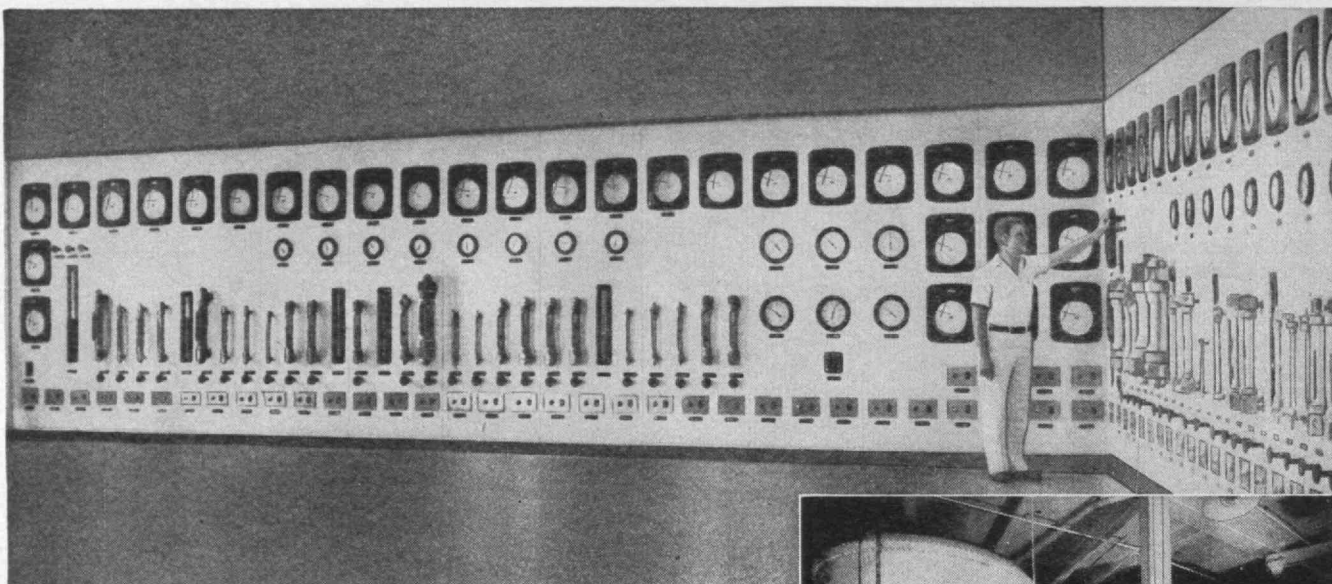
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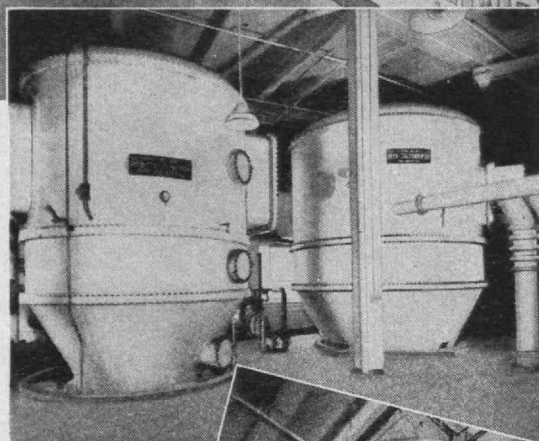
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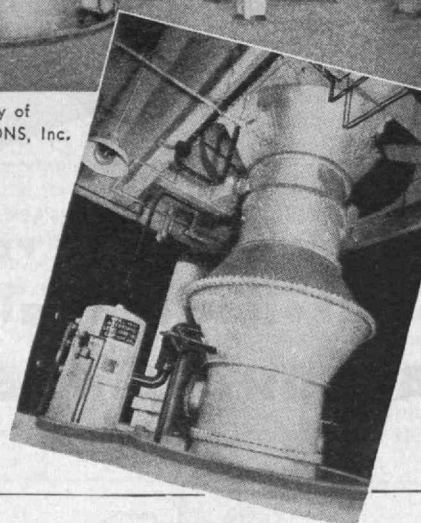
Engineers and Fabricators of

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PROCESSES and EQUIPMENT



Photographs by courtesy of
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Quality Foremost!

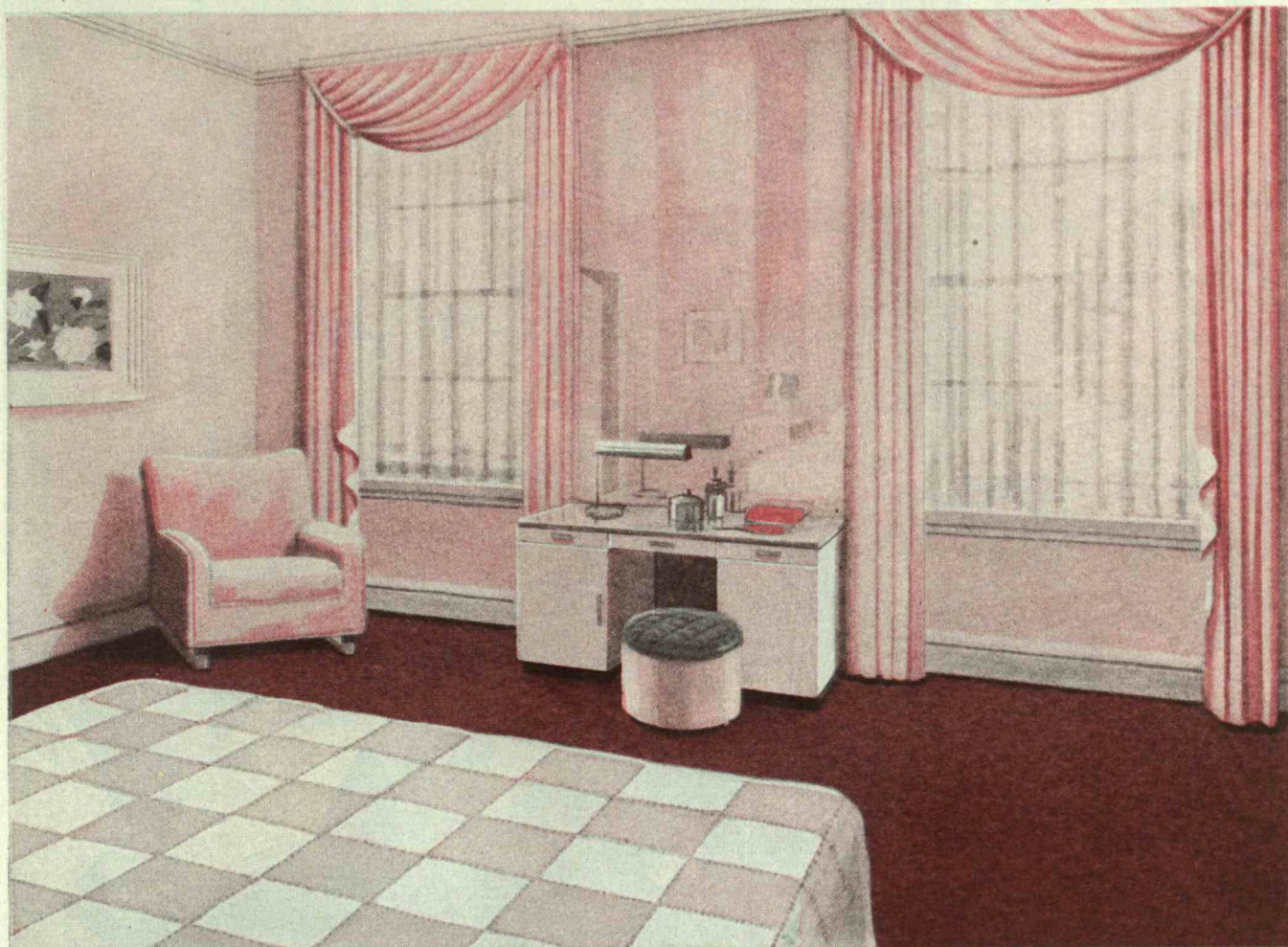
EIGHT YEARS ago the Vulcan organization designed and built the first high vacuum Continuous Distillation Unit for the production of Neutral Spirits. The product obtained from this first unit was of the highest quality ever commercially produced. These results inspired the Vulcan Research and Development Division to seek still further improvements in high vacuum distillation technique.

The distillation units shown in the above photographs, which are now in operation at the Lawrenceburg distillery of the Joseph E. Seagram and Sons, Inc., represent the culmination of these efforts to produce Neutral Spirits of superlative quality.

Vulcan equipment and processes, including the high vacuum spray-type beer stills in which the fermented mash is distilled at room temperature; and the Vapor Re-use method of distillation which effects substantial savings in steam and water requirements, are important features of these distillation units. The super-fine quality of the alcohol being produced is the most tangible tribute to the engineering advances incorporated in the design of this plant.

THE VULCAN COPPER & SUPPLY CO., CINCINNATI, OHIO

Where is the Radiator?

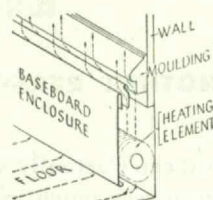


In the Home of Tomorrow the radiator is conspicuous by its absence—it is everywhere, and nowhere. In Webster Baseboard Heating, the heating element is something so small that it fits behind the baseboard and runs in a continuous line all around the exposed walls of the room.

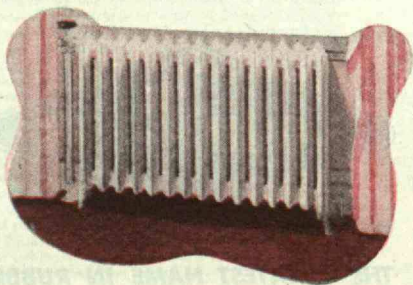
The baseboard unit supplies heat to the room using “forced” hot water. Air goes in at the floor-line, passes over the heating element, is warmed and comes out at the top—a constant, even circulation. No cold corners. No hot spots. No hot-or-cold levels . . . Installations of Webster Baseboard Heating show a variation of less than 2° from floor to ceiling.

With Webster Baseboard Heating there is nothing to limit or mar plans for interior decoration and furniture arrangement . . . And you will find that the absence of radiators in the room gives considerably more useable space.

Webster Baseboard Heating has been under development for several years and has met the most severe operational tests. Deliveries are limited now and will be increased as rapidly as materials can be made available.



The Webster Baseboard Heating Element is copper tubing around which are coiled copper fins. Baseboard Enclosure is removable for cleaning.



Make this test: Cut out illustration of radiator at left. Place cut-out picture under right window in main illustration above. See how presence of a radiator in the room interrupts whole scheme of decoration . . . A leading architect collaborated with a well-known interior decorator in preparing a series of paintings showing application of Webster Baseboard Heating to different types of rooms. These paintings are reproduced in full color. Write today for your copy of this brochure on Webster Baseboard Heating. Dept. TR-3.

WARREN WEBSTER & COMPANY, Camden, New Jersey
Pioneers of the Vacuum System of Steam Heating : : Established 1888
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Look again—you are in this picture

ANOTHER REASON FOR GOOD YEAR LEADERSHIP

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Goodyear Research does not end with tires. It works in many other

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A pioneer in rubber and the world's largest builder of tires, Goodyear is also an experienced worker in many other fields—aircraft, fabrics, chemicals, plastics, electronics . . . constantly developing new skills to serve you better.



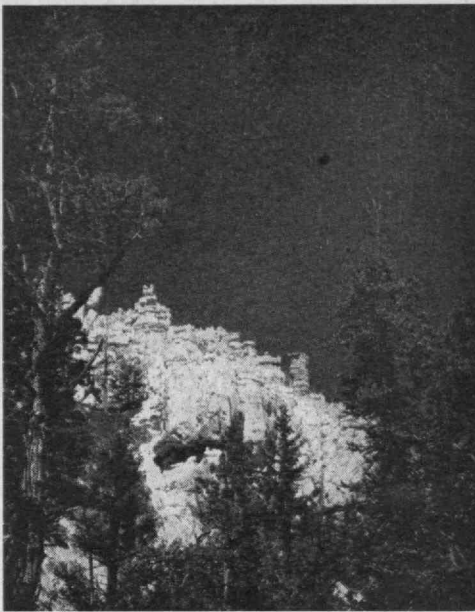
THE GREATEST NAME IN RUBBER

THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



Stanley Witt

Bryce Canyon

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From a photograph by Ewing Galloway

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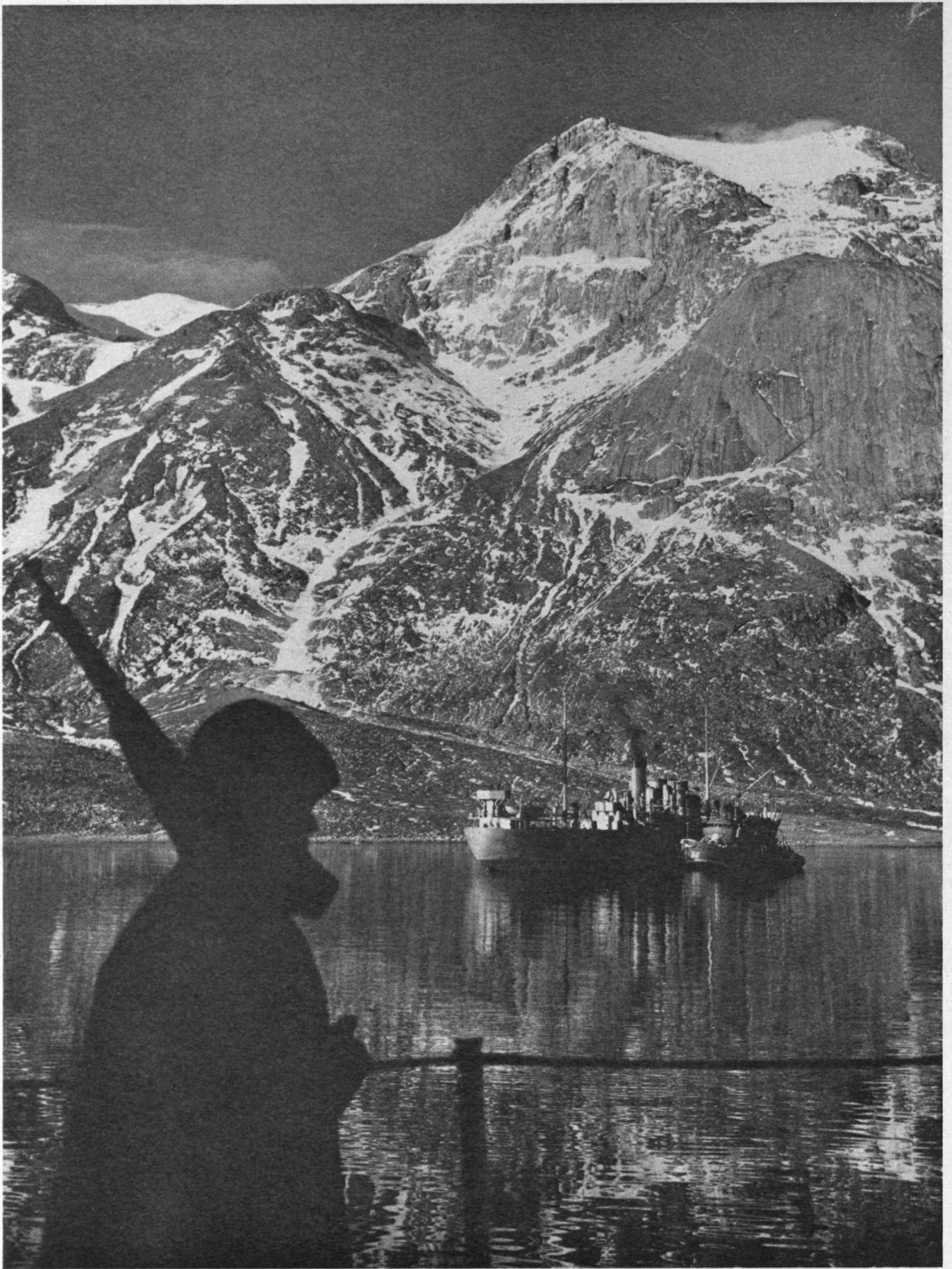
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From a photograph by the United States Coast Guard

Arctic Outpost

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The Trend of Affairs

Lunar Echoes

THE distance over which radio communication becomes possible was vastly expanded during Army tests on January 10 when signals from the Evans Signal Laboratories at Belmar, N. J., were received and recorded after having been reflected from the moon. The single pulses, of about one-tenth second duration, which made the round trip between the earth and its satellite in two and a half seconds were limited in the amount of information they could convey, but the reception of a single Morse dot was sufficient to prove, beyond all shadow of doubt, that interplanetary communication is a distinct technical possibility.

The problem of overcoming technical obstacles to make such a feat possible is, in itself, no mean achievement. The peak power of three kilowatts used in these tests was increased to an effective value of 600 kilowatts by means of directive antennas having a power gain of 200. Thus the signals directed toward the moon were equivalent to what might be produced by a dozen of this country's most powerful broadcast stations operating simultaneously. The real achievement in making contact with the moon was not so much the transmission of the signals, however, as the construction of a receiver of exceptional sensitivity and freedom from noise to pick up and record the feeble echo from the moon. The receiver is estimated to have a sensitivity of 0.01 microvolt; that is, it will produce full output with an input signal of 10^{-8} volt. By way of comparison, broadcast receivers are usually limited to a sensitivity of the order of 10 microvolts.

Primary significance of this communication achievement is that the Army tests showed conclusively for the first time that it was possible for very high-frequency radio waves to pierce the electrically charged ionosphere which surrounds the earth and makes possible long-distance terrestrial communication. As if it were impossible to be content with knowledge for its own sake, predictions of practical applications, such as detecting

enemy missiles meandering through cosmic space, immediately followed announcement that a dead planet had bounced man's message back to him.

Poor man! He develops wholesale methods of slaughter and retail methods of saving and promoting life. He spends half his time undoing the work at which he toiled laboriously during the other half. He strikes to obtain increased pay to purchase unavailable goods which have increased in price because of higher wages. He devises more and more products, and shortages become more abundant. He ploughs under pigs, burns coffee in time of need, and unites in war to disunite in peace.

If we learn anything by howling at the moon, it is that man can expect to receive only that which he has produced.

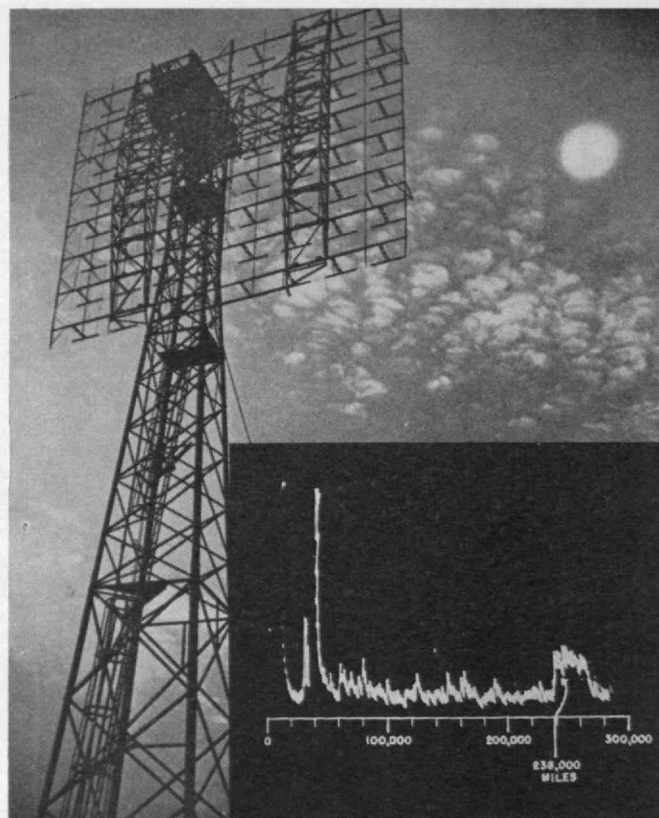
Interplanetary Communication

ALTHOUGH it is difficult to assign a precise date to the first conception of a thought, it seems as though the radar signal shot to the moon did mark the centenary of the idea of communication with other worlds.

Just a century ago the first plan of this kind was published, and its author was one of the greatest figures in the history of science, Karl Friedrich Gauss, the prince of mathematicians.

Gauss's idea was the logical outcome of the astronomical events of the preceding decades: One such event had been the establishment of the true dimensions of the solar system and hence the distance of the planets from the sun and from each other; another had been the discovery of the relative shallowness of the air ocean surrounding the earth (we now know that the atmosphere of the earth extends to less than 1 per cent of the distance to the moon); and finally there had been, in 1822, the discovery of a "walled city" on the moon.

Announced by the Munich astronomer Franz von Paula Gruithuisen, the discovery of the *Wallwerk* ("walled works," meaning place or city) indicated many things,



International News Photo

Tower at Belmar, N. J., from which radar signals made the round trip between earth and the moon in January. The insert shows the oscillographic record of the historic signal. The initial pulse is the faint peak at the zero marker. The reflected echo is indicated by the raised jagged line marked 238,000 miles.

and it made as deep an impression upon contemporary thought as one would expect. The first and obvious indication was that the moon was, or had been, inhabited by beings intelligent enough to have a technology as highly developed as that of humanity of the time of Gruithuisen. In fact, the size of the *Wallwerk* was such as to indicate that the technology of the selenites may have been highly developed, but it might also mean that the moon dwellers were larger in size than inhabitants of the earth.

The fact that the building was a fortress suggested an enemy, either ferocious beasts or, more likely for a multi-walled fortress, a hostile, equally intelligent race. Since the *Wallwerk* was partly destroyed, either the foe against which the walled city had been built had been triumphant, or the fortress had been built so long ago that both hostile races had died out in the meantime, and the destruction had been caused by time and the forces of nature.

All these conclusions would have been perfectly justified if the evidence had been reliable. We now know that it was not. Every astronomer can still see Gruithuisen's *Wallwerk*, but we no longer interpret it in the same manner as Gruithuisen did. It might be said that we don't interpret the "walled city" at all nowadays; it is a strange formation which does not seem to have a counterpart on earth, but its uniqueness does not force us to the conclusion that it is an artificial structure.

In Gauss's time, however, men of science were very much conscious of the existence of Gruithuisen's *Wallwerk*, and Gauss finally suggested sending out from the earth a message which would prove to every intelligent

being on the moon or elsewhere that the people of the earth were also intelligent and capable of abstract thought. The nature of the message had to be such that it conveyed beyond doubt two points: that the message itself was deliberate and not an accidental formation and that there was abstract thought behind it. Abstract thought, to Karl Friedrich Gauss, was mathematical thought. Consequently, he suggested a geometrical figure, the "Pythagoras" of the elementary textbook, the right-angled triangle with a square over each side.

Such a figure could not have been an accident of nature, and its meaning should have been clear to every race in the universe which had begun to think. In finding a way to send the message, to construct a "blackboard" of sufficient size, Gauss pointed to the Siberian tundra and suggested a pattern formed of dark pine forests and yellow wheat fields. The three sides of the triangle were to be six, eight, and 10 German miles long (the German mile is 7,500 meters or about 24,600 feet long), and each line a German mile wide. The lines were to be pine forests, and the area of the triangle and the squares, or of the squares alone, was to be seeded with wheat.

Such was the message to other planets proposed a century ago, a feat of considerable ingenuity and certainly possible of fulfillment even with the most primitive means. If Russia had had at that time a ruler interested in science, as it frequently had, means for sending the Gauss message would probably have been built.

Some time later, the astronomer Littrow of Vienna adapted Gauss's proposal to the Sahara desert. He proposed a set of trenches, one circular, one square, one hexagonal, one triangular, and so forth, which were to be filled with water. Then enough kerosene to burn for perhaps six hours was to be poured on the water, and one trench was to be illuminated one night, the other the following night, and so forth, the end of the succession to be celebrated with the illumination of all of them.

Although Littrow's scheme was still sensible and possible, another one, advanced by the Frenchman Charles Cros in 1869 was plainly fantastic. Cros wanted to construct gigantic shallow mirrors and use them to fuse the sand of the Martian deserts to gigantic figures, proving the intelligence of the terrestrials in various ways at once. He neither worried too much about the technical impossibilities of creating and guiding mirrors of such size, nor did it occur to him that the Martians might feel attacked and retaliate.

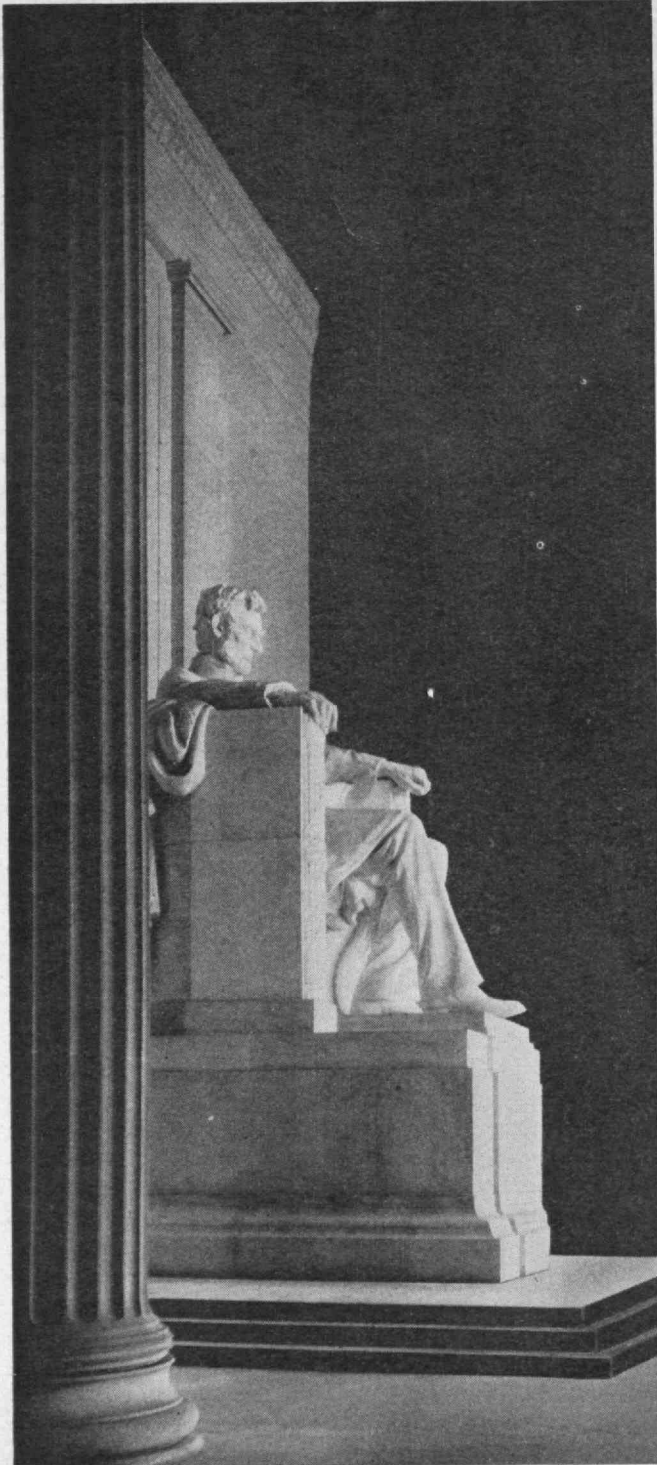
Later, when photography became common, an English engineer suggested that large quantities of flashlight powder be used for signals to other worlds. Enough was known by then to realize that the atmosphere of the earth would be highly detrimental to the project. (It would make Littrow's suggestion useless, too.) For this reason the flashlight powder was not to be exploded on the ground but was to be carried up first by captive balloons to the highest altitude to which these balloons could possibly rise. Even with that added refinement the amount needed would still be on the order of a few carloads to attract the attention of the Martians.

Of all the suggestions advanced during a full century of speculation, the first proved to be the most logical and least expensive. But even Gauss's Siberian tundra blackboard would have been of any use only under the assumption that there was somebody to answer at the other end of the line.

The American Family

Ever Striving for Bigger and Better Things, the American Family Is Apt to Break with Tradition and Place Greater Emphasis on Its Physical Rather Than Cultural Possessions

BY M. F. ASHLEY MONTAGU



Ewing Galloway, N. Y.

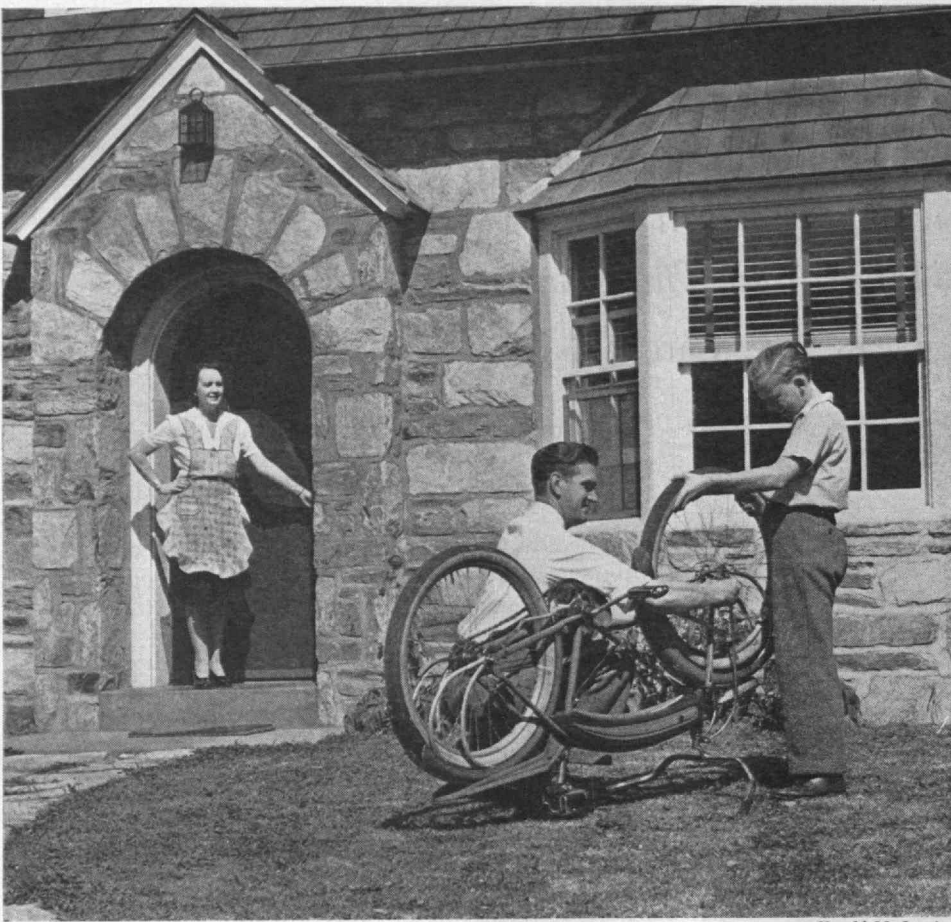
THE family is the social institution which is developed around the child-mother-father-sibling relationship. It is within the organizing field of energies constituted by this institution that the child first learns to become a human being, a social being. As a result of the interaction between himself and the socializing conditions of his particular family the foundations of his character and personality are laid. If we are to understand that part of the American character which is an expression of the socialization process within the family, it should be obvious that it is necessary to understand the structure and functioning of the American family.

At the outset we must recognize an important fact: The American family neither possesses quite the same structure nor functions in quite the same way in different classes. The differences are appreciable and significant, and their effects upon the social development of the person are important. In fact, the effects of these differences play a very considerable role in determining the character and basic personality structure of the person in American society. With this thought in mind, we shall deal with the process of socialization in the typical urban middle-class family.

The ethos of the family is determined by the ethos of the society as a whole; this relationship is clear since the socialization of the child within the family is calculated to be a preparation for life in society. In a very definite sense, the family is a minuscule reflection of the aims and ideals of the society of which it is a part. The dominant aims and ideals which prevail in any society are those with which parents endeavor to equip their children. But we are not so much concerned here with the process of this equipment as with the effects of the actual functioning of the American family upon the development of the character of the American.

In the case of the American family we occupy an enviable position in being able to trace the antecedent conditions which have produced its peculiar structure. The conditions of life on this continent have molded the unique development of society and the family. The frontier spirit of exploration, adventure, individualism, and progress, the measure of a man's worth in terms of achievement and economic status, the movement onward to better and greater things, the breaking with the past — all of these make up "the American way" and have a tremendous influence on the American family. In keeping with this spirit, parenthood in America, as Margaret

Symbolizing the pioneering spirit, respect for the dignity of man, pride in one's work and integrity, and rise to high position from humble beginnings, the Great Emancipator has had profound effect on the boys of American families.



Harold M. Lambert

The American father tends to be gentle and helpful; he is apt to be generous, sympathetic, and a good mixer.

Mead has pointed out, has become a very special thing. "... parents see themselves not as giving their children final status and place, rooting them firmly for life in a dependable social structure, but merely as training them for a race which they will run alone."¹

The American parent is bent on seeing that his children go places and do things, that his children will go to better places and do bigger things than he himself did. In no other land do parents do as much to make their children happy and successful as in the United States. Sensitive foreigners never fail to comment upon the fact that children in America are so much happier than those in Europe. As compared with Europe, here there is a greater freedom from parental over-discipline and a much greater freedom to behave as a person in one's own right. These forms of behavior are not unrelated.

But let us now briefly consider the structure of the American family.

In other societies the family is a common enterprise of mother and father. In America there is an asymmetric segregation of the roles of mother and father in which by far the greater part of the socialization of the child falls to the mother. The father's principal role is extra-familial. Although his part in the socialization of the children is not an extended one, in terms of temporal duration, it would be a grievous error to suppose that it is a minor one. To him, the family is very much more than a

refuge in which he relaxes from the rigors of the masculine occupational world. It is a refuge, of course, but it is also a great deal more. There is no Western society in which the father is more devoted to his children and kinder to his wife than in the United States. It is, however, equally true that in no other society is the father so freely willing to transfer the greater part of the upbringing of the children to his wife. This fact is illustrated by the story of an American who introduced his children to a friend with the words, "George, meet my wife's children." The fact that a Hollywood script writer put this remark into a film scenario indicates that it was meant to strike a responsive chord, and it did. Another story tells of the inquiring observation made by a child to its mother concerning its father, "Mummy, who is that man I see around the house on week ends?"

That the father is present so much less than the mother and that he is likely to be the very much weaker disciplinarian, the weaker socializing agent, have very important implications for

the development of the American character. In the first place, the emotional bonds are generally very much stronger with the mother than with the father. Mother's Day is not merely a tribute to the weaker sex, for Americans don't believe in a weaker sex. A peculiar American phenomenon which has been called "mommism" is the sentimentalized attachment of the male particularly to "mom." In an extreme form, mommism becomes ludicrous as is illustrated by the hulking brute of a boxer who stertorously breathes into the microphone: "Hello, mom, this is Bruiser. It was a good fight, an' I won. See ya soon, mom."

The attachment to the mother is indicative of the importance of her role in forming the character of the child and has one very significant influence upon American character on the whole. Through its influence the American develops a certain number of traits which Europeans regard as primarily feminine. Europeans describe these traits collectively under the term "softness" — the softness of the female as compared with the "hardness" familiar in European males. The American male tends to be gentle, kindly, and helpful; he is apt to be generous, sympathetic, and a "good mixer." European women who know America agree that American men make the best husbands in the world. They do not feel that American men compare too favorably with European men intellectually, but they are convinced that men in the United States are easier to live with and are more co-operative than European men. In brief, I should say that this dissimilarity between American and European men is a

¹ Margaret Mead, *And Keep Your Powder Dry, An Anthropologist Looks At America* (New York: William Morrow and Company, 1942), p. 41.

function of the amount, kind, and source of the love which they receive in childhood.

The tenderness of the American male is something of which most American parents are aware. It seems to me that the parents' anxiety that their boys should not develop too much in the direction in which their daughters are encouraged to develop is reflected in the family's over-emphasis on toughness. There is a feeling that a boy ought to be tough. "Don't be a sissie," is the kind of thing more often heard in this country than in any other. It is not that parents want their boys to be tough, but they distinctly do not want them to be soft. From early childhood a double influence, originating chiefly from the mother, operates upon "Junior." These two forms of socializing include a goodly amount of mothering on the one hand and, on the other, those influences and rewards which are calculated to make Junior a little man.

Becoming a man, growing up in terms of the American creed, is measured in terms of achievement, which means competition. You must run better, skate better, play better, get better marks, eat better, get there faster than anyone else does. You must advance. Getting ahead is the great object in life of American Juniors. Getting ahead, Junior learns, is the principal means of retaining the love of his parents, particularly of his mother. He feels that his parents' love is conditional upon how he compares with and measures up to others; he must compete and be successful. Becoming a man means being a success, and so the parents and Junior can hardly wait for the time when they can decently put him into long pants. The United States is the one place in the Western world where boys not yet in their teens wear long pants.

Girls, of course, are also affected by this drive pattern, and by the time they are halfway through high school, painted fingernails and lips and most of the other signs of technical adulthood have been adopted. The female, too, is judged in terms of comparison with other females. As one of the most conspicuous methods of calling attention to her achievements, the American female indulges in external attractiveness. The average American middle-class female dresses as well and as expensively as do only members of the upper classes of Europe. The lower-class American female dresses more attractively than the European middle-class female. In no European land is the principle of conspicuous display as

significantly symbolized by the mink coat as in America.

It is not so much that the male regards his wife as a means by which he can demonstrate to the world his own successful achievement as that the female uses her husband's money to demonstrate her own successful achievement. To succeed, a woman must make herself attractive, and here again the drive is tremendously strong, even if emphasis is placed on external superficialities. In no other land have beauty parlors, Madame Rubinstains, and Elizabeth Ardens become the institutions that they have in this country. Beauty is big business. The charms of the female are everywhere, but nowhere else have they become so aggressively competitive in the open market as in America. It was in America that women first took to bloomers, first dared to raise their skirts above the ankle, and first abandoned the "bathing costume" for the kind of beach clothes they now affect.

Women are not any more sexually endowed in America than they are elsewhere in the world, but the great American spirit of competition has affected them no less



Harold M. Lambert

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than it has the male. The girl must make a better marriage than her mother did, she must move on and ahead. Hollywood interprets the pattern for her by the time she is old enough to go to the movies. There the girl always marries the man of her dreams; the poor girl marries the rich man's son, the rich girl marries the poor but promising youth. These fairy tales satisfy the masses; the noble poor girl steps up and Hollywood's rich youth buys her a mink coat and a Deussenberg; the pampered rich girl steps down and her dream youth steps up, and everyone lives happily ever after. The youth looks like Clark Gable, and the girl like Katharine Hepburn, Ingrid Bergman, Veronica Lake, or Betty Grable, preference being given, as it seems, to a standardized type of mediocre intellect, education, and culture, if we are to judge by recent movies.

To the European, American aggressiveness is puzzling and distasteful, and "the dependence upon externals for the validation of success" (Mead) appears childish. To the European, the American, with his tremendous impetus to obtain renown by achievement and his hunt for status, seems to sell his birthright for a mess of prestige.

The American's admiration for big things — for size, magnitude, quantity, the tallest buildings, the largest planes, the longest roads, and the most money — reflects the nature of his scale of achievement. He must excel; it is "the American way."

Obviously, there is a very definite and a very clear relationship between the emphases of the American's socialization process and the nature of his character drives.

Compared with the European father the American father is a negative quantity. Although the European father may be away from home quite as much as, if not more than, the American father, he is nothing like the *pater absconditus* that the American is. The image of the European father is very strong, that of the American comparatively very weak. In Europe the mother uses the father as a sort of bogeyman with which to threaten the children: "Father won't like that," or "Wait 'til your father comes home." The father in Europe is feared; one goes in awe and respect of him. The next thing to the power of the deity is the power of the father; by the middle of his adolescent years an English boy, for example, is referring to his father as "the old man," a phrase which perfectly defines all that is patriarchal.²

² See the classical study by Sir Edmund W. Gosse, *Father and Son: A Study of Two Temperaments* (New York: Oxford University Press, 1934).

On the other hand, the American father is looked upon as a friend by his children from their earliest years. Often he is the intermediary who tries to soften the disciplinary behavior of his wife toward the children. His own disciplinary conduct as a parent tends to be kindly. The children can argue with their father, and he will often admit that he was wrong and apologize to them. Father gives them an enormous amount of freedom, and everyone knows that he is a much easier mark than mother. Nevertheless, he can also make things very difficult by withholding his approval and his money. But altogether there is a kindly affect associated with him. There is very little conflict with him, and he does not constitute a competitor. The Oedipus conflict can scarcely be said to exist in the American family. Father isn't a rival, rather

he is a friend. The image of authority is a reasonable one. It is very probable that this peculiar child-father relationship explains that striking difference between European and American culture which can be summed up in the words, "In America you can argue with and bawl out the umpire — in Europe you never can." It explains the comradely feeling of American soldiers for their superior officers and the protective, benevolent attitude of the officers to their men.

This peculiar attitude toward the image of authority was interestingly exhibited during the first few days following the death of the late President Roosevelt. Many Americans felt as if they had lost a protecting father; in some cases, the loss was felt as if a member of one's own family had died. The President was not regarded as an awesome, unapproachable ruler, but as a kindly, helpful, guiding father, a person upon whom one could

rely for a steadying hand and at the same time with whom one could crack a joke. In czarist Russia the czar, *batoushka* (a very intimate term for father), was similarly regarded by the peasant, but one could most certainly not crack jokes with him; there was enough of a consciousness of his autocratic role effectively to prevent that.³ The rulers in Germany and England are not regarded as kindly fathers. The image of the reigning leader or monarch is patterned on the image of the father.

Sibling rivalry in the American family is also weak, for, as Mead points out, such rivalry is directed to success in the outer world, in contradis-

³ The resemblance between American and Russian family structure is striking. On the congeniality of the American and Russian personalities, see Pitirim A. Sorokin, *Russia and the United States* (New York: E. P. Dutton and Company, Inc., 1944), p. 55.



Harold M. Lambert

In a sense, the American never really grows up; he never grows beyond the ideals which were patterned for him as a child; the male remains an overgrown boy. On the other hand, the American father is looked upon as a friend by his children from their earliest years. Altogether there is a kindly affect associated with him.

(Concluded on page 308)

The Industrial Way of Life

An Increasingly Abstract and Impersonal Pattern of Living is the Price Which Industrialism Has Exacted for the New Inventions and Wealth with Which It Has Endowed Human Life

BY PAUL MEADOWS

INDUSTRIALISM functions as a way of life — as an over-all pattern which arranges for a people their technics and relationships into a relatively satisfying design for living. Except for the flint-tool economy of early man, industrialism is the most widely spread culture in human history. Nevertheless, as a culture system it is less familiar to sociologists and anthropologists than many of the so-called simpler cultures.

The focus of any culture tends to be on its economic arrangements. An economy is the cultural organization which develops around some central mode of economic activity. Industrialism is an economy — a cultural configuration — which has been built up around the machine technology, technics, and techniques.

Industrialism is often made synonymous with technology. The error is grave, but enlightening. All economies are technological: They function in and through a body of technics and techniques. The word "technology" refers to adjustment patterns centering about technics and techniques; "technics" implies tools, implements, instruments, and machines; "techniques" denotes skills. Technics may be mechanical, but they are also symbolic and organizational.¹ Likewise, techniques may also be mechanical, symbolic, or organizational. An economy contains all three types of technics. Tools, instruments, implements, and weapons represent mechanical technics; ideas, traditions, philosophies, and sciences are examples of symbolic technics; groups and institutions are manifestations of organizational technics. The employment of the three kinds of technics develops three types of skills: mechanical, symbolic, and organizational techniques. Technology, therefore, is an enveloping and broadly inclusive term. Industrial technology is a phrase descriptive of man's tool-using techniques at the level of machine technics.

¹ The concepts here are those suggested in L. L. Bernard, *An Introduction to Sociology, A Naturalistic Account of Man's Adjustment to His World* (New York: Thomas Y. Crowell Company, 1942), Chapter XXIX.

There is, of course, a sense in which it is proper to speak of the culture of Western civilization as technological. In no other society have mechanical technics been so thoroughly exploited as in our own. The machine, to use our popular expression, is the center of industrial culture and exercises an imperious control over all sectors of the system. What, then, is the nature of industrial machine technology?

Industrial technology centers around the use of the machine in the production and transportation of goods and services. The essence of the machine is not the instrument itself but the method of transforming random energy into disciplined energy and the means for extending man's power and sense perception. The method is the ruling idea. It involves the development of routines so that typical activities can be done by machines, thus achieving greater accuracy, dependability, and rapidity.

Industrial technology, then, is a matter of technical and social strategy. Technically, there must be some mechanism for performing a useful task. This mechanism is characteristically an engine and an end-tool. For industrial purposes, the job must be routinized and specialized, and the necessary operations must be arranged in orderly series. Any job which is repetitive can be mechanized and serialized. In this manner the productive organization establishes the means for regularity in the flow of production. Socially, there must be an organization of human

relations in which human energy in a plant (adapted to a single task but related functionally to all other tasks) is accommodated to the demands of the physical equipment.

Industrialism may be said to possess an inner structure. The purpose of industrial machine technology is to increase productivity. The basis of the system is continuity of production. Automaticity through disciplined power is the method of achieving industrialism. As Cole² has



Harold M. Lambert

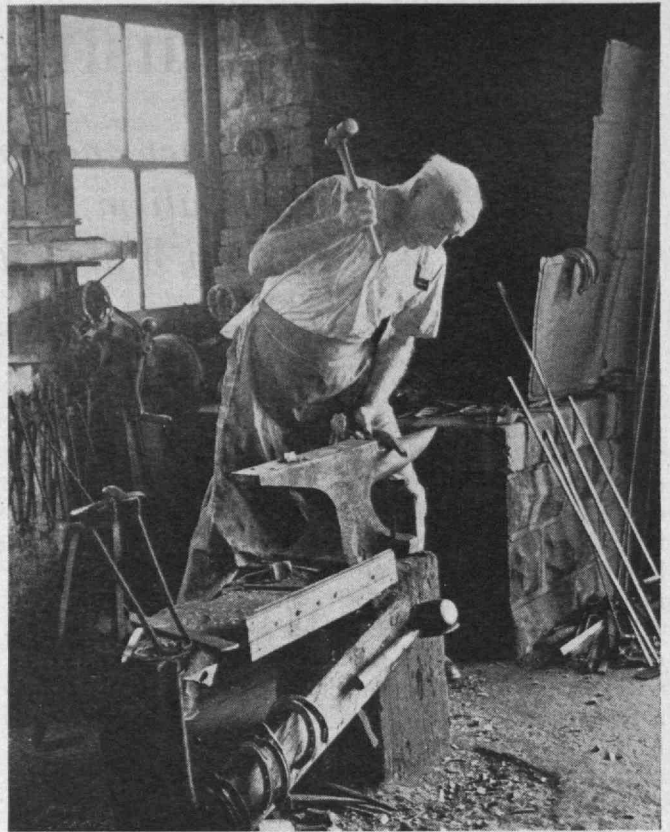
The machine is the center of industrial culture and exercises an imperious control over all sectors of the system.

² G. D. H. Cole, "Industrialism," *Encyclopaedia of the Social Sciences* (New York: The Macmillan Company, 1930), VIII, p. 19.

said, "Industrialism is fundamentally an affair of productive technique." Whatever its political-economic form, the spirit of industrial enterprise is "the discovery and exploitation of improved methods of producing wealth." Employed most extensively in the processes of manufacturing, industrial technology is finding a widening use in extractive and transporting activities. It has enabled public and private enterprise to cut costs by increasing the scale of operations.

The outer structure of industrial society has been built up around the technical achievements of mechanized production. Consisting chiefly of the factory system and the business firm, this outer structure has congregated workers in factories, business houses, and cities and has revised the scope and methods of business life. It has changed the personnel and status of the human labor force, has transformed the system of property-holding, and has subjected all human relations to the dictates of a global market economy.

Three features, then, characterize the industrial culture. Industrialism is a technic involving the use of machines in production. We next recognize an internal core of industrial technology. This core consists jointly of specialized machines and tools, knowledge of processes and exchange problems, and a group of human beings disciplined for industrial work. Finally, there is an outer pattern of relationships requiring a minimal concentration of men and machines in a type of group production centering around the factory. A co-operative organization of the physical and social productive factors is needed to process resources and market products. This entails a community organization which requires living quarters and which demands behavior patterns and controls for



Harold M. Lambert

The workman's property in his craft or skill disappeared with the corporation . . .

the human beings responsible for business and industrial functions (urbanism).

The Inner Structure of Industrialism

Industrial civilization, although based on machines, is infinitely more than mechanized equipment. For if industrialism means the entire organization of mass production, utilizing machine technics, then the industrial revolution was a revolution in human relations very much more than it was a revolution in production methods. From it emerged the factory system, the business firm, the urban community, and new ideas associated with democracy, humanitarianism, and nationalism. The new system of human relations which it produced, not the revolutionary productive technics, marks the real significance of industrialism.

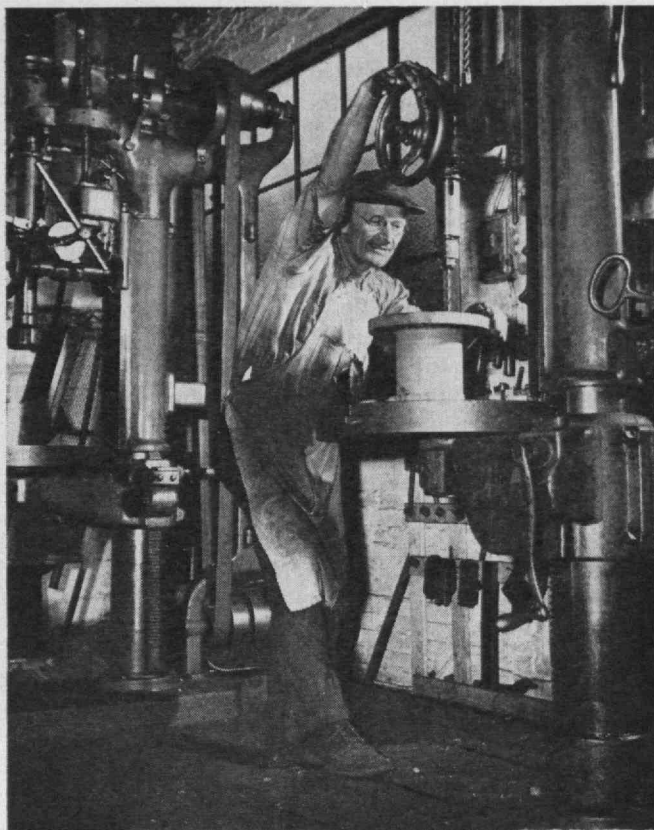
This new system of human relations, ushered in with the technical revolution, had its social origins in post-medieval Europe. The end-tool set in motion by the industrial revolution was the technological mastery induced by a new scientific outlook. In a significant sense, industrial civilization is the product of the scientific mentality. Of all human economies, industrialism alone is the product of curiosity and a systematic investigation of the human environment. In industrial society techniques or skills, once used for the fortuitous fashioning of implements and weapons, have been put at the disposal of a higher order of human behavior — that of science and philosophy — for the purpose of securing and organizing tested knowledge about the world.

From this curiosity about the world has come, as Bacon long ago predicted, "the endowment of human life with new inventions and riches." Upon this wealth technology



Ewing Galloway, N. Y.

The industrial revolution was a revolution in human relations very much more than it was a revolution in production methods. It has changed the status of the human labor force.



Harold M. Lambert

... and the craftsman became the propertyless industrial worker in the factory.

has laid heavy levies. The focal point of interest has been in the repetitive, the machine-like. But technology has also been generous in its rewards. On the basis of a body of tested expectations, the technician fashions tools, instruments, and machines with a reassuring dependability, a gratifying accuracy, and a desired rapidity — the very essence of the machine system.

Based on the principles of science and centering around the machine as a system of controlled efficiency, industrialism has sought the conversion of physical resources into goods for human use by means of mechanical standardization and quantity production. Efficiency is the guiding norm if not, indeed, the real end.

Industrial culture assumes a high rationality. Rational behavior is that which brings maximum machine-like adaptation of means to the given end. With the expanding utilization of symbolic technics — those of physics, chemistry, mathematics, accountancy, and so on — the pattern of living becomes increasingly abstract and overwhelmingly impersonal. The actions of life become accommodated to the rhythms of a mechanized existence. Muscular power, the patterning of life by the seasons, the creative participation in the work process become less consequential. These are valued chiefly in terms of the "unhired time" (i.e., leisure, vacations, recreations) of the individual. The uniformities of behavior become best expressed in the manner of the machine, and the ideal image of the human being becomes a mechanized one.

The Outer Structure of Industrialism

The outer structure of industrialism, manifested mainly in the factory, the firm, and the city, is an historical outgrowth of its inner structure; but the relationship is not

unilinear, it is interactive. At many points and in many ways the outer pattern manages to lay claim to and direct its inner form.

The factory system is a type of group production arising from the application of mechanized power to machines. It was made possible by such technical and social developments as the standardization of the units of work and the units of product, the division and subdivision of labor, the specialization of productive functions, and the arrangement of technical operations in series. Its co-operative features must not be underestimated. It necessitates such diverse activities as the separation of mental and manual productive skills; the organization of thought in planning and processing production; the measurement of energy expenditures; the maintenance of a raw material supply; the management of productive stages; the adaptation, placement, and training of the labor force. These skills are the attributes of social intelligence and social organization.

What counts most of all is a dependable organization of work habits in the individual laborer: sustained attention, correct perception, speedy reaction, alert judgment. If these responses can be made habitual or if they can be made to function as highly motivated habits, rising productivity and lowering costs are more certain. If through the selective focusing on repetitive operations and the consequent separation of means and ends, the worker suffers degradation of his skill as a craftsman, it is really a matter of no great concern. Indeed, a long view of the factory system is apt to dismiss the degradation of craftsmanship as a mere trifle because transitory, for the productive requirements of an increasingly automatic factory



Ewing Galloway, N. Y.

The massive patterns of the city grind the personal relations of industrial man exceedingly fine and thin. They create a fast rippling but shallow volume of life.

system anticipate the ultimate displacement of large masses of workers.

The future of the factory system is tied to that of business enterprise, and the direction which the latter is likely to take seems, at present anyway, to be unrelated to the needs or possibilities of the inner structure of industrialism. Business enterprise is a private or public system, or both; it is not inherently one or the other. In most of the industrial countries of the West both forms exist side by side. Enterprise is an organization of productive elements — a product of the co-operative work of men, land, and capital. It is a set of shared activities, and the entrepreneur may be a family, a community, a state, a person, a small group of persons, or a mass.

The factory reflects the changing fortunes of business enterprise. Several things have happened to business enterprise under the aegis of machine technics. It seems to be moving toward increasingly large-scale operations. The big firm, which concentrates operating units, workers, administrative skills, and marketing services, has come to dominate the industrial scene. There is no evidence that the large-scale enterprise has any other cause than administrative design. Except perhaps for the heavy or durable goods industries, machine technology makes no imperious demand for large-scale operations. Students of big business are much more impressed with the business methods which have fostered large-scale production than with the technical processes which might make it seem justifiable.

The principal reasons for the emergence of large business are to be found in the rise of the private corporation as a type of enterprise. Originally a public agency for the government of an area or a trade, the corporation became a business device for the conduct of business affairs, especially for those requiring large amounts of capital. Indeed, in terms of the need for investment, the private corporation has proved to be the most effective technic ever invented (outside of public finance) for the aggregation of wealth. Its rise has meant a real revolution in enterprise, particularly with respect to property. Thus the workman's property in his craft or skill disappeared with the corporation. The craftsman became the propertyless industrial worker. On the other hand, the condition of the capital owner was rendered less enviable, for the private corporation, through its separation of control from ownership, effected a radical shift in the property status of the capital lender.

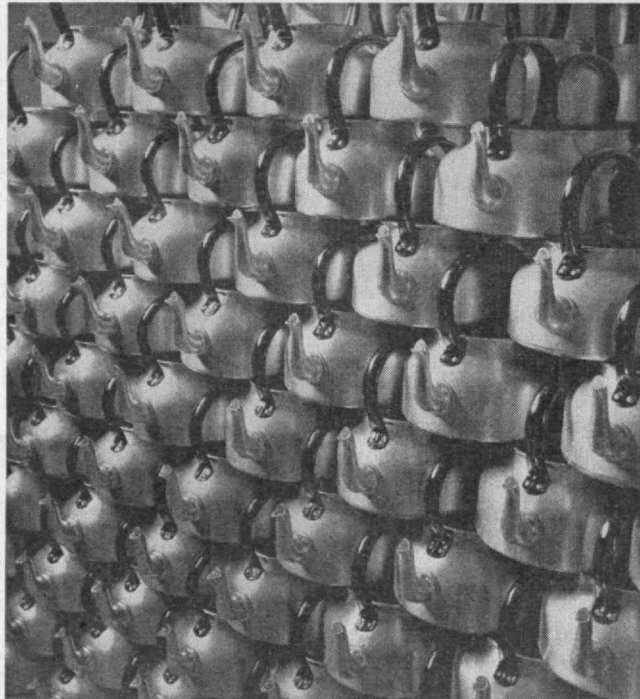
The traditional logic of control over the uses of property by its owner was made impossible by multiple ownership, dispersed geographically and numerically. The stockholder became an absentee owner, and his control of

property was delegated to another group of persons, the management, who stand only in a loosely regulated fiduciary relationship to him. With the corporate severance of control and ownership both the unity of property and the motivations of ownership have gone with the wind. The field of ownership was thus opened wide to legalized sabotage of production, for the line of cleavage between technician and administrator became a vast chasm.

The corporate trend in enterprise, marked as we have seen by the rise of management to power, suggests another salient characteristic of the industrial enterprise system — its administrative aspect. The business relations of enterprises with one another now take place through the medium of "administrative co-ordination." The devices are readily recognizable: administrative price-fixing, administrative rather than free competition of industrial units, marketing agreements, subsidies, and so on. The automatic adjustments of the system no longer exist, if indeed they ever did.

Freely formed and free-acting markets are fast giving way to an economy of administered co-ordination, which continues on its way to fulfillment at the hands of corporate industrialism.

The third of the subsystems which compose the outer structure of industrialism, the urban system, represents another area of the general process of industrialization. The factory served to adapt human relations to machine technics. The business firm brought a further adaptation to the organization of industrial production, and the industrial city functions to provide the community setting for industrialism. The industrial city is a new turn in the evolution of the urban system. Urban life is an old pattern. In the industrial city, machine technology sits in the center of

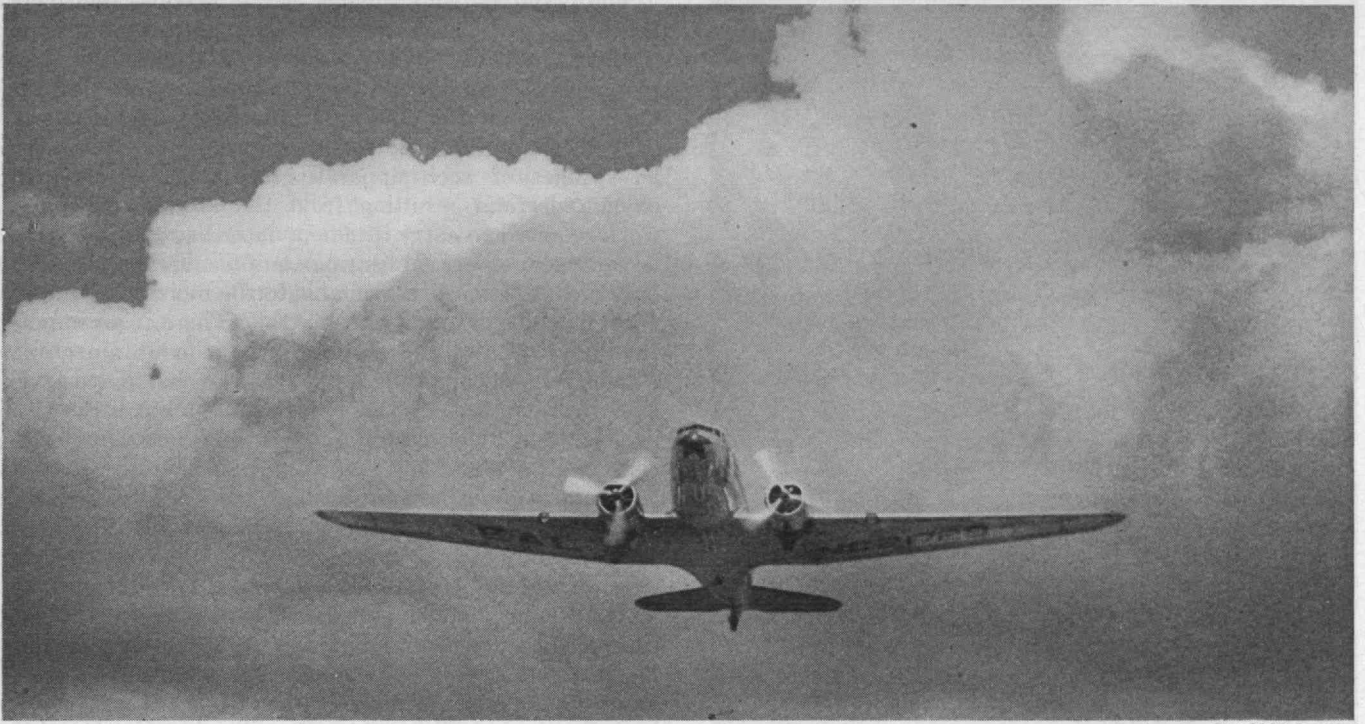


Black Star

Industrialism has sought the conversion of physical resources into goods for human consumption by means of mechanical standardization and quantity production.

its specialties. Probably no culture has so self-consciously employed urban life for its own ends as has industrialism. The city is the scene of its man-power mobilization. Here are the markets of business enterprise: finished products, building materials, credit, and labor. With all the talent of modern advertising and publicity, the city holds up the behavior models so valuable for advance in the industrial and business arts. Urban dominance of the culture has become an all-pervading and inescapable influence, mediated by radio and the advertising page, and glamorized by the motion pictures.

Urbanization is the indispensable partner of industrialization, the measure of its growth, the mirror of its complexities, the interpreter of its values, and the matrix of its expansion. Its concentration of buildings, of change, and of people expresses a centripetal flow of people toward the factory centers of industrial technology. The flow is held in check by great dams of (*Concluded on page 312*)



Harold M. Lambert

Zenith or Nadir?

Man's Knowledge of the Planet He Inhabits Is Restricted by the Difficulties of Overcoming Physical Limitations Binding Him to the Earth's Crust

BY FREDERIC W. NORDSIEK

IN all of limitless space, man's tiny earth is a sphere but 8,000 miles in diameter; and yet of his putative domain, man actually knows only a thin external shell. Let us first disregard the portions of the earth which have been studied by penetration with tools and instruments and measure the extent of man's insinuation of his own physical presence.

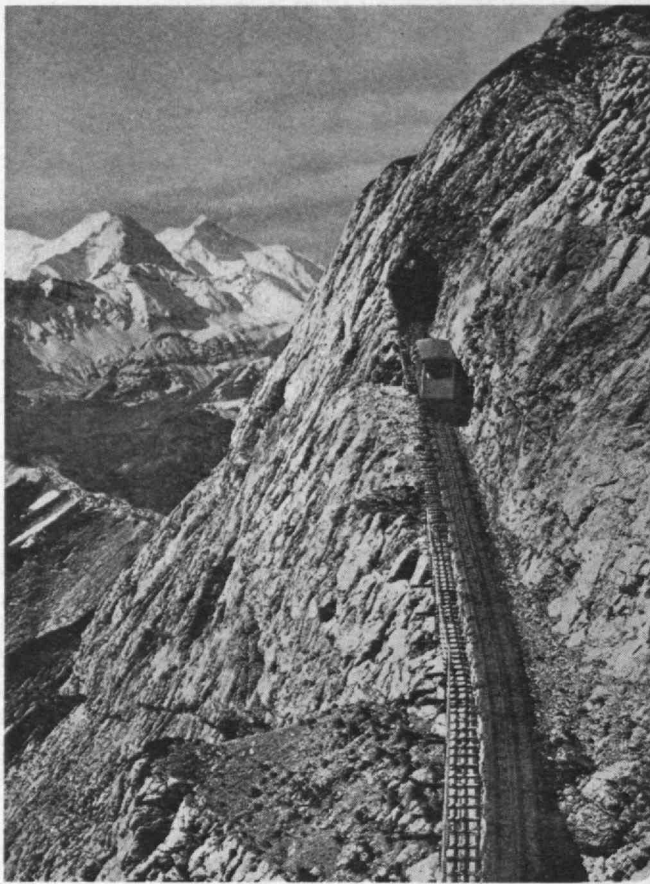
Looking upward, eminences of the earth's terrestrial surface may be ignored because the loftiest of these, though yet unscaled, dwindles to insignificance beside flights of aircraft into the stratosphere. Such an ascent by balloon, long before the day of heavier-than-air craft, in the year 1862 attained a height of 36,960 feet above mean sea level, well beyond the limit of the troposphere and a good mile higher than the tallest of mountains. In 1935 Anderson and Stevens set the record for high-altitude flight, soaring in a balloon to 72,395 feet. Thus was added to man's ken a total of 14 miles above the level of the sea.

Turning our consideration now netherward, we find that the deepest descent into the aquasphere has been a paltry 3,000 feet; this was the extent of William Beebe's bathysphere explorations in 1934. It is in the lithosphere, or solid crust of the earth, that there has been the nearest approach by man toward the core of the earth, an African gold mine which has attained a depth of 8,500 feet.

Thus of the terrestrial sphere's 4,000-mile radius, man has touched but a tiny outer mile and a half; to this he has added a more substantial, but still small, extension of 14 miles into the surrounding atmosphere.

There are good reasons why exploration, so far advanced on the surface of the earth, has been sharply limited in directions at right angles to this surface. Although the explorer meets obstacles and discomforts in tropic jungle and arctic ice field, these are slight hindrances compared to what faces him who seeks to rise far above or delve far below the level of the sea, whether in the sea itself or in the lithosphere or the atmosphere.

The sea level may be taken as optimal for human life. Here the atmospheric pressure is 14.7 pounds per square inch, the oxygen content of the air approximates a good half pound per cubic yard, and the annual mean temperature in this country at the 40th parallel is 53 degrees F., all conditions conducive to human comfort and supporting vigorous physical activity. Rising above sea level, the air rapidly becomes attenuated, until at 10,000 feet the free oxygen, a fundamental requirement of the human as of most forms of life, is almost halved, and the pressure is reduced to 10.1 pounds per square inch. Finally, the annual mean temperature, for the latitude and location given above, at this elevation drops to 30 degrees.



Emil Goetz

Looking upward, eminences of the earth's terrestrial surface may be ignored because the loftiest of these, though yet unscaled, dwindle into insignificance beside flights of aircraft into the stratosphere.

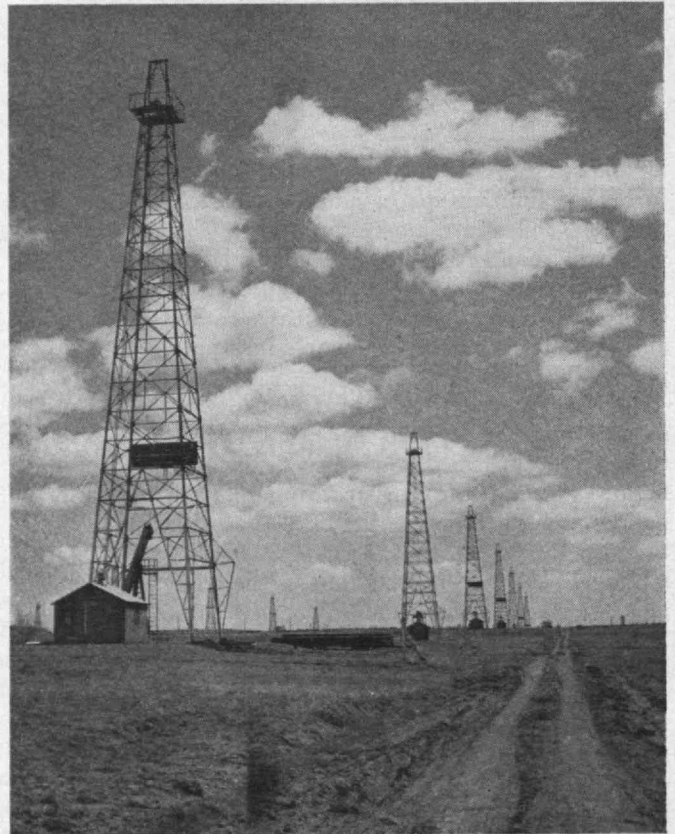
The adverse symptoms suffered by human beings at high altitudes are largely resultant from anoxemia, or oxygen deprivation of the blood and hence of all the tissues. This is true even though as soon as a man enters regions of lowered oxygen tension, certain of the truly marvelous compensatory mechanisms of the mammalian body begin to operate. Respiration automatically becomes deeper and more frequent, passing a larger volume of the dilute air through the lungs. The heartbeat quickens to speed blood circulation to the tissues. Finally, the red corpuscles, actual oxygen-transporting principle of the blood, increase in number and acquire a greater affinity for oxygen, so that the ventilating capacity of a given volume of blood is markedly augmented. Unfortunately, these expedited heart and lung functions in one respect initiate a vicious cycle. Both are forms of muscular exertion, requiring increased oxygen supply for the muscles involved.

The mountain climber and even the individual ascending a height in a funicular car or other conveyance undergo relatively gradual diminution in oxygen supply. Nevertheless, at altitudes much above 10,000 feet, symptoms of "mountain sickness" quickly develop; these are lassitude, headache, eye and ear disturbances, heart pain and palpitation, blueness of the extremities, and nausea. The person remaining at such heights for a few days achieves a degree of acclimatization, but even then he finds the slightest physical or mental exertion profoundly exhausting, since most of the available oxygen supply is demanded for the basal metabolism of the body.

The aviator, who attains great heights relatively quickly, is apt to experience no symptoms of anoxemia until he suddenly loses consciousness. Hence the flyer planning a high-altitude ascent is required to don his oxygen mask at the outset. He readily avails himself of oxygen equipment, whereas the climber must weigh the advantages of such apparatus against the increased oxygen demand resulting from the arduous muscular work required to carry it. The aviator has another great advantage in electrical heating equipment; exercise is the only means of warmth available to the mountaineer, and anoxemia sharply limits him in this. There is an important physical aptitude which occurs in mountaineering. This is evident mainly in a pulse beat which at sea level is slower than average, which accelerates but little with exercise, and which rapidly returns to normal when exercise ceases.

Diminished air pressures at high altitudes have no significance per se, but changes in pressure in the course of climbs may cause discomfort in the middle ear through expansion of the air more or less confined within this space. These changes are equalized through the Eustachian tubes, leading from the middle ear to the mouth cavity. Normal persons find little difficulty in making the necessary adjustments, particularly when the tubes are opened, by going through the motions of swallowing. On the other hand, those with congenitally narrow tubes, or with these passages clogged by catarrh or other irritations, may find middle ear distress during changes in altitude quite disabling.

The aviator rarely and the mountaineer never are subject to "bends," the deadly effervescence of the body fluids which is the scourge of the diver and is discussed



Harold M. Lambert

Oil wells, sunk to depths of 15,000 feet, permit sampling of rock and study of temperature phenomena at various depths.

below. This is because the pressure changes which the seekers after zenith experience are relatively small, even though they may be undergone quickly and may represent large changes in altitude.

Why the rigorous climate at high elevations? Why, for instance, does Mount Washington, 6,288 feet above temperate New Hampshire, have a climate equivalent to that of northern Labrador? Rising air expands because of diminishing atmospheric pressure, in turn due to the shortening column of air at successively higher levels; expanding gases cool. Thus air currents sweeping up the side of a mountain cool appreciably before reaching the peak; going down the opposite slope they warm correspondingly. Physiographers call this adiabatic cooling and heating. Furthermore, because the insulating power of air is a function of its density, the rarefied air on mountain heights prevents little of the sun's heat from reaching the ground, but conversely, loss of heat from the earth by radiation is rapid after sunset. Hence the extremes of temperature at high altitudes and the sun-suited maidens skiing at high noon on the mountain snow field. Finally, since land elevations to an extent govern air movements, winds at high altitudes are apt to be violent, particularly above timber line, where there are no trees to serve as windbreaks.

Because of the intense cold at high altitudes, more snow falls each winter than melts during the other seasons. This snow, melted by the pressure of its own weight and then refrozen into solid ice, becomes the glaciers or ice rivers which are salient features of the great mountain ranges. Consequently, in addition to the other adverse conditions enumerated above, the mountaineer risks special hazards of snow avalanches, falling rock and ice, deep ice cre-

vasses, and difficult footing because of the bleak, rough mountain terrain. Physically he suffers all of the difficulties of the polar explorer, including snow blindness, plus special risks such as high-altitude throat, a painful condition resulting from the low temperature and extreme dryness of mountain air.

The scaling of mountain peaks has been undertaken both by sportsmen and by scientists wishing to study the phenomena of high altitudes. The Alps in Europe, Mount Aconcagua in South America, and mighty Kilimanjaro in Africa all have been conquered. As early as 1913 Stuck and Karstens scaled the highest peak in North America, 20,300-foot Mount McKinley. But the top of the world's highest mountain, 29,000-foot Everest on the continent of Asia, has never been reached. In the 1920's several carefully planned attempts were made, using the best methods and devices of the mountain climbing art. Oxygen equipment was employed, and native guides from a tribe accustomed to high altitudes were enlisted to carry the heavy apparatus. The highest level attained, nevertheless, was a good thousand feet short of the summit. Although every possible precaution had been taken, 13 human lives were lost in these attempts to scale forbidding Everest.

Such are the obstacles to exploration upward. What now hinders investigation downward?

When man burrows into the earth, he shuts off the friendly, vital sun; he must overcome engineering problems to prevent the ground from falling in and crushing him; if he is anything of a claustrophobe, there are psychological barriers to surmount. But these deterrents are readily mastered. What of the converse of difficult conditions found at great heights? Increasing air density means

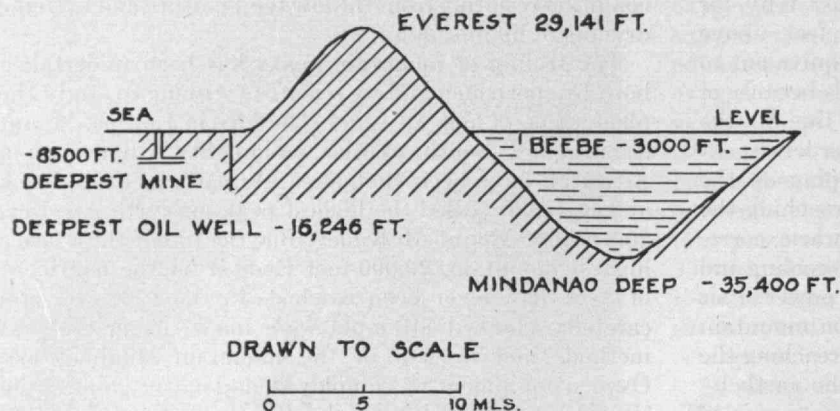


Harold M. Lambert

When man burrows into the earth, he shuts off the friendly, vital sun, he must overcome engineering problems to prevent the ground from falling in and crushing him; if he is anything of a claustrophobe, there are psychological barriers to surmount.

ANDERSON & STEVENS
BALLOON 72,395 FT. (1935)

PEZZI (1938)
AIRPLANE 56,046 FT.



Graphical record of the heights and depths which man has reached give clear indication that his travels are still limited to within a few miles of sea level.

a richer supply of desirable oxygen — if anything, an advantage. The few additional pounds of atmospheric pressure existing in the deepest hole in the world appear to have no unwonted influence on the human moles who work therein. Finally, man-made abysses are cul-de-sacs; they are immune to air currents and are untouched by thermal influences of the sun. Could we not then penetrate indefinitely toward the center of the earth? How closely may mortal man approach a "burning fiery furnace"? For the core of the earth is molten; its temperature exceeds 2,000 degrees F.

Thermal gradient, or increase in temperature, at successively lower levels in the mother rock varies among different points throughout the world. For example, the Robinson Deep Gold Mine at Johannesburg, South Africa, has a Turf Shaft which is the world's deepest hole referred to above; every 220 feet of descent into the virgin rock there reveals an increase in temperature of 1 degree F.; rock temperature at 8,000 feet is 101 degrees. By contrast, virgin rock temperature at the 8,000-foot level of the deep gold mines at Saint John del Rey, Brazil, is 124 degrees. At a depth of but 7,700 feet in the Champion Reef Gold Mine, Mysore State, India, rock temperature reaches a blistering 129 degrees!

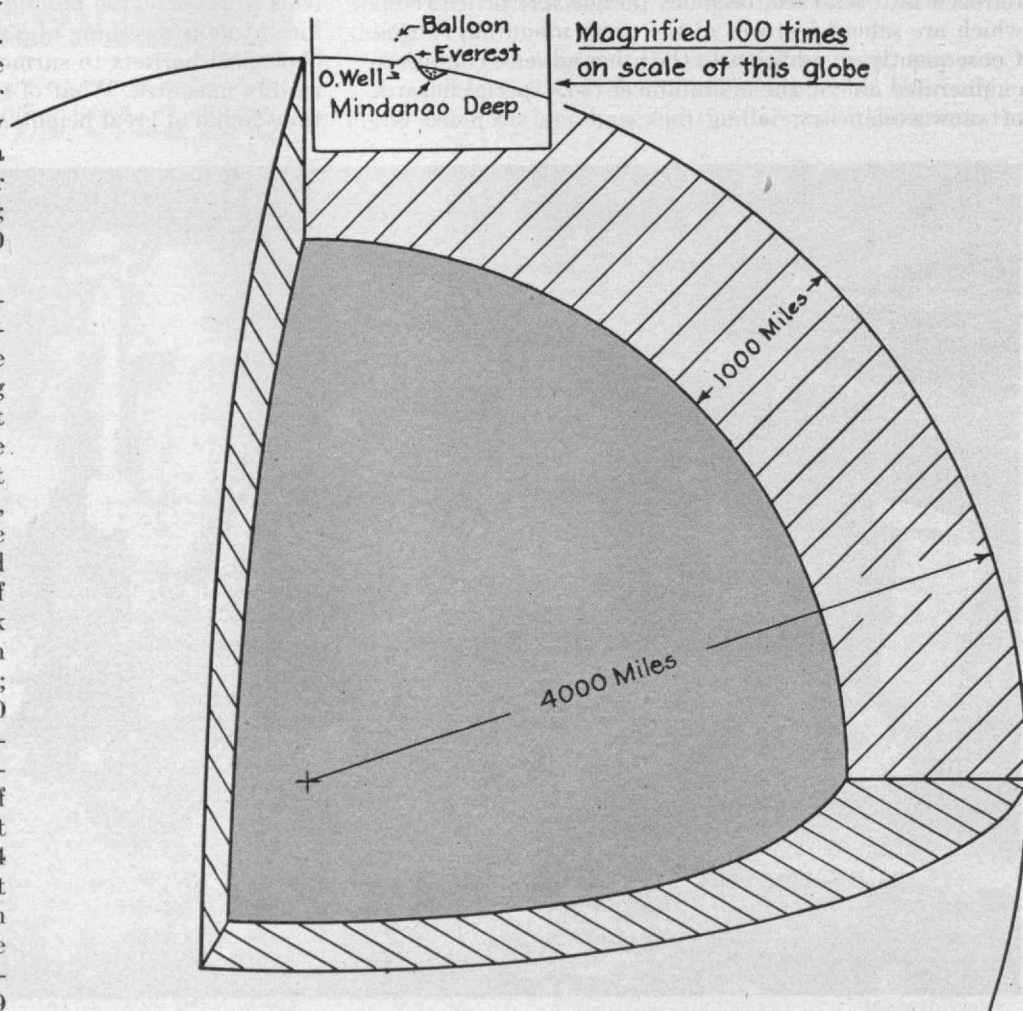
Industrial hygiene problems

in the deep mines are aggravated by an adiabatic warming of ventilating air amounting to about $5\frac{1}{2}$ degrees for each 1,000 feet of additional vertical depth and also by a high relative humidity; this humidity results from the necessary use of copious amounts of water in the mines to control dust in order to minimize the incidence of silicosis or tuberculosis due to inhalation of mineral dust. High humidity interferes with the natural defense of the human body against high external temperatures by diminishing the evaporation of perspiration from the skin.

Refrigeration of ventilating air has been the principal expedient for creating tolerable working conditions in the deep gold mines; at first, natural ice was used, but more recently mechanical refrigeration has been applied. However, humidity control has been vigorously advocated as more effective than temperature control, and it

has been claimed that dry air could be supplied to any level by sinking separate shafts for ventilating purposes, thus preventing humidification of incoming air as it passes through the wet mine workings.

So much for the principal deter- (Continued on page 312)



Only a very thin shell of the earth's crust and atmosphere have been visited by man, but these puny travels have called upon all of his mental and physical achievements for their accomplishment.

The Channel Tunnel

Pipe Lines Aided the Allies by Carrying Liquid Fuel from England to the Continent; but the Fate of the Channel Tunnel Hangs in the Balance—As It Has for the Past 144 Years

BY WILLY LEY

IT was in April, 1942, after a demonstration of flame throwers that Geoffrey Lloyd, the British minister of petroleum warfare, asked Admiral Lord Louis Mountbatten whether there was anything else which his ministry could do to assist the coming invasion of the European continent. Lord Louis is reported to have answered with the question, "Can you lay an oil pipe line across the Channel?"

The advantages of such an idea, provided that it could be carried out, were obvious. If fuel for the Allied tanks, half-tracks, trucks, and airplanes had to be carried across the Channel by tankers (of which not too many were available), it would be vulnerable to German attack all the way. If pipe lines could be laid across the Channel, the fuel supply would be vulnerable to German attack only at both ends. Furthermore, there would be no delay, as it would not be necessary to pump the fuel into a tanker and then to pump it out again. There was no doubt about the usefulness of such an idea; the only question was whether or not it could actually be done.

The majority of British engineers questioned by Geoffrey Lloyd declared that such a project was impossible, but there were some exceptions. A. C. Hartley, the chief engineer of the Anglo-Iranian Oil Company, said that it would be possible with pipes fashioned like a submarine cable, minus its core of electric wires. B. J. Ellis of the Burma Oil Company and H. A. Hammick of the Iraq Petroleum Company had an even simpler idea. Three-inch steel pipe, they said, could be reeled up on drums and pulled off again with a reasonable degree of straightness, provided the drums were large enough, 10 yards or more in diameter.

Both types were made. The pipe suggested by Hammick and Ellis was called "Hamel," and the other, suggested by Hartley, was called "Hais" (Hartley-Anglo-Iranian-Siemens, the firm of Siemens and Henleys being the manufacturer), and since they were coining names, the whole project of Pipe Lines Under The Ocean was referred to as "Operation Pluto."

When completed, Operation Pluto consisted of four pipe lines between the Isle of Wight and Cherbourg and 16 between Dungeness and Boulogne. Of the total, 12 were Hais cable-like pipe lines and the other eight were Hamel steel pipes. Between the middle of August, 1944, and the middle of May, 1945, the Pluto pipes carried 120,000,000 gallons of fuel from Great Britain to Europe.

This system was actually only a substitute for one which the Allies might have had at their disposal had the British lawmakers of former times been a little more farsighted and known more about engineering than they did. The Allies might have had the Channel tunnel, and the

Channel tunnel, had it existed, might have changed the whole pattern of the war.

The Channel tunnel is the oldest unfinished engineering project on our planet. All other projects of equal age have either been carried out a long time ago or have been definitely discarded as impractical for one reason or another. But the fate of the Channel tunnel still hangs in the balance.

The father of the idea was a French engineer by the name of Mathieu-Favier, who proposed a tunnel from Calais to Dover in 1802. He submitted his plan to the "First Consul of the Republic," namely, Napoleon, who was favorably impressed with the idea and even went so far as to propose it to Great Britain. But soon after the proposal the relations between the British Empire and Napoleon rapidly deteriorated. Napoleon harbored invasion plans, and the British built fortresses to ward off his fleet. Ironically, it was one of these old fortresses which housed one of the pumping stations for Operation Pluto.

Even if Anglo-French relations had remained friendly, the tunnel probably could not have been built then. An undersea tunnel with a total length of about 30 miles would have been a bit too much for the technology of that time; and even if the tunnel had been successfully built, engineers would have had a hard time solving the problems of illumination and ventilation a century back.

Eye for the Future

But the idea was good for future reference. It was revived after Napoleon's time by a British engineer, Dunn, whose plan actually foreshadowed Operation Pluto. Dunn wanted to save the expense of drilling such a long tunnel and proposed large iron pipes laid on the bottom of the Channel, pointing out that the highest water pressure to be encountered resulted from only 160 feet of sea water and could therefore easily be withstood by heavy large pipes. Dunn's project died in the course of time, but it, too, was good for future reference.

Before we go on, it might be useful to become acquainted with a few figures. The width of the Channel between Folkestone on the English side and Cape Gris Nez on the French side is about 20 miles. The deepest portion of the Channel along an imaginary line linking these two points is 160 feet. For safety reasons, the tunnel should be located some 100 to 120 feet below the bottom of the Channel, making the total depth below sea level around 280 feet. At that depth the safety would be absolute, but such depth would, of course, increase the length of the tunnel, since long inclines would be needed on both sides. Thus the total length of the Channel tunnel would be 30 miles, with 20 miles under the sea. An electric

train, traveling at the conservative rate of 60 miles an hour, would need just one half hour to go from entrance to exit, and with electric trains and electric illumination the ventilation problem would not present any special difficulties.

The Simplon Tunnel in the Alps, which was opened to rail traffic in 1906, is $12\frac{1}{4}$ miles long but had to be drilled through hard rock, whereas the Channel tunnel would lead all the way through gray chalk, a sedimentary rock which, being soft and easy to work, offers little resistance to modern machinery.

Some years after Dunn's plan, two French engineers advanced another proposal. Probably being afraid of ventilation trouble, they drew up plans for a high Channel bridge, 24 miles long and estimated to cost close to a billion gold dollars. Reconsidering their own proposal, the two engineers, Ransonnet and Polonceau, later advocated a dam with a few gaps (spanned by high bridges) for ships to pass through. The dam was supposed to cost only one-fifth of the price of a continuous bridge.

It is almost needless to say that none of these early plans did more than provide newspaper and magazine writers with interesting material. But in 1856 events took a more serious turn. Napoleon III then ruled France, and when a French engineer, Thomé de Gamond, came to him with a plan for a tunnel from Folkestone to Gris Nez, the French emperor immediately favored it. Napoleon III supported De Gamond not only because the plan was good, generally speaking, but also because his uncle, Napoleon I, had supported Mathieu-Favier.

On the British side, De Gamond was not greeted with such enthusiasm. Lord Palmerston simply asked him, "How can you expect us to reduce a distance which is too short as it is?" Nautical experts vetoed the plan too. De Gamond wanted to create 14 artificial islands housing ventilating shafts along the length of the tunnel, but he was told that Channel navigation was too difficult as it was, without 14 artificial obstacles in the way of shipping.

But De Gamond did not give up. Ten years after his first attempt he presented a new plan. In 1872 a firm for the purpose of building the tunnel was founded under the name of Channel Tunnel Company, and in 1877 the three chief engineers of the firm presented the final plans to both governments involved. In 1882 actual work began.

Near Shakespeare Cliff on the English side and near Sangatte on the French side two vertical shafts more than 400 feet deep were excavated, and from their bottoms mile-long "galleries" were driven seaward. These galleries beautifully confirmed the predictions of the geologists. The rock under the bottom of the Channel was gray chalk, a solid layer several hundred feet thick, with no signs of breaks or interruptions. It was ideal material for underwater tunneling, being impervious to water and also soft enough to be worked without blasting.

Everybody had the highest hopes, and then a single arrogant and prejudiced conservative caused the end of the great plan and put an indeterminate delay on the Channel tunnel: General Wolseley, who was then chief of the British general staff, declared that a Channel tunnel would be "a permanent menace to English security" and exerted all his authority to prevent the tunnel from being built. Of course, he could not forbid it, as he would have liked, because the project had to be investigated by a parliamentary committee. The committee, consisting of members of both Houses of Parliament, deliberated for a

long time and finally decided with a vote of six to four against the project but was unable to name a reason for its vote.

The Channel Tunnel Company did its best to save the case. It promised to build, on the English side, a citadel which, equipped with heavy artillery, would not only be able to ward off an enemy attack but could also shell the tunnel mouth into collapse. The company also promised heavy automatic steel doors and changed its plans to include an otherwise unnecessary four-mile "dip" in the tunnel for quick flooding. Nothing helped; General Wolseley remained adamant. Work was stopped in 1884, and the Channel Tunnel Company was dissolved a year later. Countless investors lost their money, and at an examination of the two galleries half a century later it was found that the machines were still standing on virtually dry ground.

In 1906 the Simplon Tunnel was opened, and since Lord Asquith had said two years earlier that he "was not unfriendly" to the idea of a Channel tunnel, the British Government was approached again. The premier was then Sir Henry Campbell-Bannermann, but General Wolseley was still alive, and Campbell-Bannermann said "no." In 1914, when it became apparent that war was coming, Lord Asquith was approached again. He must have been afraid of Wolseley's ghost because he, too, rejected the project.

Military Value

That the reasoning behind these rejections was not only poor but unsound from a military point of view has been stated clearly by a military man who certainly was a better general than Wolseley. Questioned after World War I about the Channel tunnel project, Marshal Foch stated roundly, "If the Channel tunnel had been built, it might have prevented the war, and in any event it would have shortened its duration by one-half."

That was in 1922. Two years later the project was revived once more, again by French interests. In the meantime, poison gas had been used militarily, and electric trains had become common. So the French offered in addition to the citadel, the floodable "dip," and the steel doors, a system whereby the tunnel could be filled with poison gas from the English side and the electric power for illumination and for propulsion of the trains could come from a power plant on the English side, using a voltage different from the French standard. On their own part, the French said, they would be satisfied with a steel door, six 75's, and 30 machine guns for the defense of the "mousehole."

The government of Ramsay MacDonald rejected the project. Winston Churchill stormed, but to no avail.

In 1928 the campaign for the Channel tunnel was renewed. When Wolseley started the fashion of condemning the Channel tunnel, he had had at least one good argument: Great Britain was an insular power, and the tunnel would end its insularity. But during World War I the Paris Gun had shot over a range of 80 miles, and German airplanes and Zeppelins had bombed London. The insularity did not exist any more, at least not in the old sense. In short, the tunnel was rejected once more.

In 1939, during the period of the so-called "phony war," the Allied Supreme War Council discussed the tunnel once more, wondering (*Concluded on page 322*)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Deputy Dean

APPPOINTMENT of Professor Thomas K. Sherwood, '24, as deputy dean of engineering at the Institute, effective February 1, was announced in January by President Compton. Dr. Sherwood will share with Edward L. Moreland, '07, Dean of Engineering, the academic administration of the 12 departments included in the School of Engineering and the research programs associated with these departments.

Edwin R. Gilliland, '33, who accepted appointment last July as deputy dean of engineering for a temporary period only, returns now, in accordance with his plan, as a full-time professor in the Department of Chemical Engineering.

Professor Sherwood is a native of Columbus, Ohio, and was educated at McGill University, from which he received the degree of bachelor of science in 1923, and at the Institute, where he did postgraduate work leading to the degrees of master of science in 1924 and doctor of science in 1929 in chemical engineering. He was an assistant in chemical engineering for two years beginning in 1924, and from 1928 to 1930 he was assistant professor of chemical engineering at Worcester Polytechnic Institute. In

1930 he returned to the Institute to become assistant professor of chemical engineering and was promoted to the rank of associate professor in 1934 and to professor in 1941.

During the war Professor Sherwood was in turn a technical aide, a section chief, and a division member of the National Defense Research Committee, with which he has been associated since 1940. In 1942 he was consultant to the Baruch Committee, and in 1944 he was appointed expert consultant to the War Department.

The American Institute of Chemical Engineers chose Professor Sherwood to receive the William H. Walker Award in 1941. Professor Sherwood is a member of Sigma Xi, Alpha Chi Sigma, the American Chemical Society, and the American Institute of Chemical Engineers. He is the author of more than 50 technical publications, including two books on chemical engineering.

John D. Mitsch, 1898-1946

JOHAN D. MITSCH, '20, Associate Professor of Structural Engineering in the Department of Civil and Sanitary Engineering, lost his life in an airplane accident on January 18.

Except for the period of a year in 1924, when he gained experience in the field as an estimator and superintendent of construction on concrete buildings, Professor Mitsch had been a member of the instructing staff since his graduation in 1920. In addition to his teaching duties in the field of stress analysis and bridge and reinforced concrete design, he had been active for many years in teaching and administrative work at Camp Technology, the Institute's engineering camp in Maine. He was made an assistant professor in 1934 and was promoted to associate professor in 1940. He was a member of the American Society of Civil Engineers and the American Concrete Institute. He is survived by his wife, the former Frances McFaul of Machias, Maine, and two children, Mary R. and John D., Jr.

Annual Ballot

BALLOTS to be mailed this month will give members of the Alumni Association of the Institute opportunity to vote for officers and representatives of the Association and for term members of the Corporation.

The National Nominating Committee — consisting of Samuel C. Prescott, '94, chairman, Albert W. Higgins, '01, Fred W. Morrill, '07, Harry L. Havens, '09, Orville B. Denison, '11, Irving W. Wilson, '11, Frank Maguire, '17, Raymond R. Ridgway, '20, Charles A. Williams, '21, and Charles H. Toll, Jr., '23 — has proposed Alfred P. Sloan, Jr., '95, VI, chairman of the board of directors, General Motors Corporation, New York City, to serve as honorary president of the Alumni Association for the coming year. The establishment of this new post brings to the Association the leadership of a loyal Alumnus and one of the country's most outstanding industrialists.



Professor Thomas K. Sherwood, '24, recently appointed deputy dean of engineering at the Institute



The National Nominating Committee has named the following Alumni for office: for president, Harold Bugbee, '20, X, XV, President, Walter B. Snow and Staff, Inc., Boston; for vice-president, C. George Dandrow, '22, IX-B, Vice-president, Johns-Manville Corporation, New York City; for election to posts on the Executive Committee, Avery A. Ashdown, '24, V, Associate Professor of Organic Chemistry at the Institute, and Larcom Randall, '21, VI, associated with T. O. Metcalf Company and long identified with industrial and technical advertising.

Named for term membership on the Corporation are: A. Warren Norton, '21, XV, President, Press Wireless, Inc., New York City, and retiring President of the Alumni Association; Frederick S. Blackall, Jr., '22, XV, President and Treasurer, The Taft-Peirce Manufacturing

FOR PRESIDENT

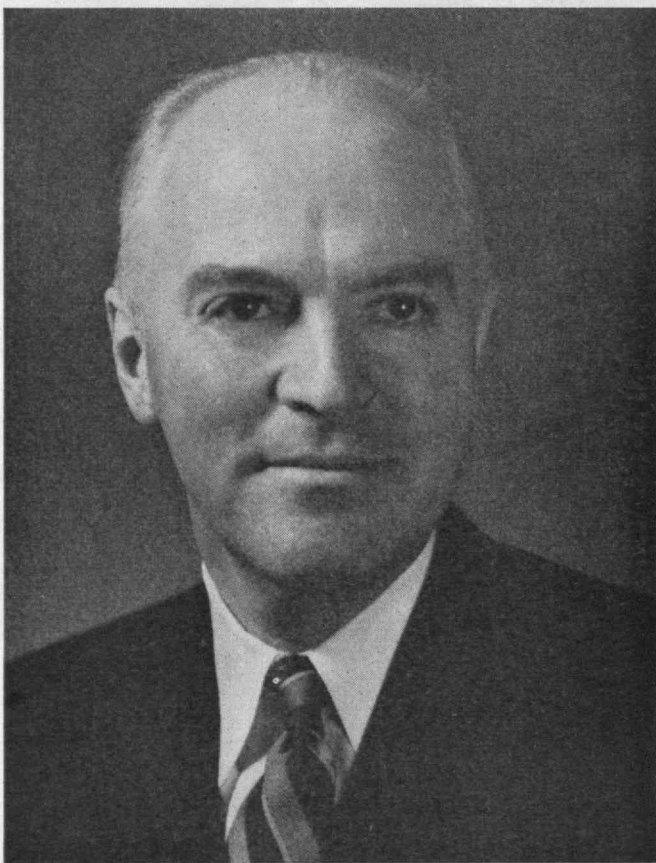
... of the Alumni Association of the M.I.T., Harold Bugbee, '20, X, XV, has been named to serve for the coming year. Mr. Bugbee has been associated with Walter B. Snow and Staff, Inc., industrial advertising counsel, for virtually his entire business career and since 1928 has been president of that corporation. Mr. Bugbee is permanent secretary of the Class of 1920 and has been appointed a member of the executive committee of the Alumni Association to fill the unexpired term of the late John D. Mitsch, '20. He is a member of the Alumni Council, the Alumni Advisory Committee on Musical Clubs, and the Technology War Record Committee, and he was vice-president of the Alumni Association for 1941-43. As special lecturer in Course XV; Business and Engineering Administration, he created and for eight years conducted a course in industrial advertising for graduate students and seniors at the Institute. For two terms he served as chairman of the board of governors of the New England section of the American Association of Advertising Agencies and on the national executive board of that association. Mr. Bugbee is a member of the National Industrial Advertisers Association, the Boston Advertising Club, the Winchester Country Club, and the Winchester Boat Club. His home is in Winchester, Mass.

FOR HONORARY PRESIDENT

... of the Alumni Association of the M.I.T., Alfred P. Sloan, Jr., '95, VI, is nominated. After graduation from the Institute, Mr. Sloan was associated with the Hyatt Roller Bearing Company and from 1897 to 1916 was president of this firm. From 1916 to 1918 he was president of the United Motors Corporation. His administrative activities with the General Motors Corporation began in 1918 and he served as vice-president until 1923. From 1923 to 1937 he was president of this corporation and since 1937 has been chairman of the board of directors. Mr. Sloan is a member of the board of directors of E. I. du Pont de Nemours and Company, Pullman Company, Ethyl Corporation, J. P. Morgan and Company, Kennicott Copper Corporation, Braden Copper Company, and Pullman Incorporated. He is a trustee of the Memorial Hospital in New York and of the Sloan-Kettering Institute for Cancer Research. Mr. Sloan is a member of the Society of Automotive Engineers, Delta Upsilon fraternity, the National Republican Club, the Detroit Club, the University, Metropolitan, and New York Yacht clubs in New York, the Turf and Field Club in Belmont Park, Long Island, the Bath and Tennis Club in Palm Beach, Fla., and the Piping Rock Club in Locust Valley, Long Island. He is president of the Class of 1895 and a life member of the Corporation of the Institute.

Company, Woonsocket, R. I.; and Albert J. Browning, '22, XV, Director, Office of Domestic Commerce, Department of Commerce, Washington, D. C.

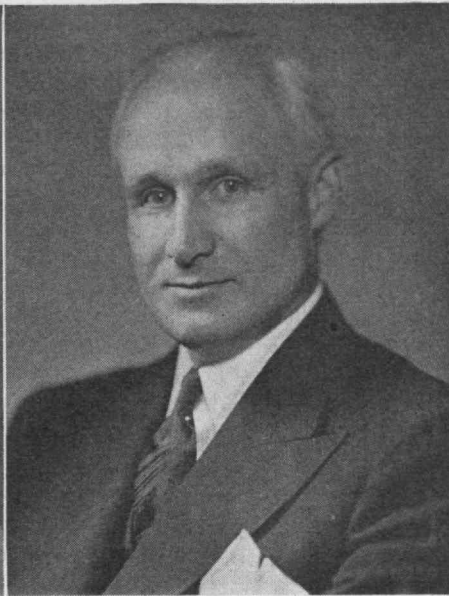
New representatives on the National Nominating Committee are to be elected this year by Districts 1, 2, 4, and 5 to succeed Messrs. Prescott, Denison, Ridgway, and Maguire. The men placed in nomination, one to be elected for each district, are: *District 1*: Robert S. Williams, '02, V, Head of the Department of Metallurgy at the Institute; Frank P. Scully, '15, I, President and Treasurer, Scully Signal Company, Cambridge; *District 2*: Robert C. Erb, '17, XV, Treasurer and general manager, J. F. McElwain Company, Nashua, N. H.; Robert G. Holt, '33, IX-B, National Life Insurance Company,



George M. Cushing, Jr.



U. S. Signal Corps Photo



© Bachrach



Underwood and Underwood

TO THE CORPORATION

... for five-year term membership representing the Alumni Association, the National Nominating Committee has named these three Alumni. From left to right they are: Albert J. Browning, '22, Director, Office of Domestic Commerce, Department of Commerce, Washington, D. C.; A. Warren Norton, '21, President, Press Wireless, Inc., New York City, and retiring President of the Alumni Association; and Frederick S. Blackall, Jr., '22, President and Treasurer, The Taft-Peirce Manufacturing Company, Woonsocket, R. I.

Montpelier, Vt.; Henri Gaudefroy, '34, VI, Ecole Polytechnique de Montreal, Montreal, Canada; *District 4*: Ralph C. Robinson, '01, V, General Electric Company, Schenectady, N. Y., retired; Harold F. Hedberg, '20, II, assistant superintendent, Albany Felt Company, Albany, N. Y.; Whitworth Ferguson, '22, VI, President and Treasurer, Ferguson Electric Construction Company, Buffalo, N. Y.; *District 5*: Gordon G. Holbrook, '10, XIII, works manager, Federal Shipbuilding and Dry Dock Company, Kearny, N. J.; William H. Mueser, '22, I, Moran, Proctor, Freeman, and Mueser, New York City.

Research Laboratory of Electronics

ELECTRONIC devices and the principles of electronics find application on every hand. There is no departmentalization of the particles of matter, and basic research cuts across many branches of science. It is natural, therefore, that the recently organized Research Laboratory of Electronics at the Institute should provide graduate training and research facilities as an interdepartmental enterprise under the joint sponsorship of the Departments of Electrical Engineering and Physics.

The objectives of the new laboratory are to increase the unity and effectiveness of technical education offered at the Institute; to offer better facilities for conducting study to students engaged in research in several fields touched by electronics; and to provide adequate facilities to carry on effective research and the opportunity to work on the frontiers of knowledge in electronics. To fulfill its objectives the laboratory will be primarily concerned with basic research rather than with problems which might be classified as developmental engineering.

It is intended that the activities of the laboratory shall cover broadly the field of electronics, although the heritage of the war makes it inevitable that emphasis will fall heavily on certain unfinished phases of war research. In fact, a number of activities of Division 14 of the National Defense Research Committee which were in an uncom-

pleted stage at the Radiation Laboratory at the end of the year will be taken over by the new Research Laboratory of Electronics.

The program outlined for the laboratory is broad in scope and makes provision for research on such topics as:

(1) Microwave electronics, in which emphasis is to be placed on the basic sources of microwave electromagnetic power and apparatus and techniques for dealing with electromagnetic radiation in the region of the spectrum between infrared and the shortest waves used in radio communication.

(2) Basic physics, involving the study of the electromagnetic properties of matter at microwave frequencies.

(3) Electronic techniques applied to the problems of physics and engineering. Included in this classification are the development of instruments and techniques for measuring very high-speed electrical phenomena, research on the generation of sound waves at frequencies above 30,000,000 cycles a second, and development of components for the acceleration of charged particles to extremely high energies.

(4) Microwave communication, dealing with the basic problems governing the transmission and reception of information, and engineering applications for the development of advanced communication systems. Wide band transmission, pulse techniques, and studies of interference are topics for research which fall logically under this program.

(5) Electronic aids to computation to be studied in a program closely co-ordinated with the Institute's plans for the support of applied mathematics.

A notably large number of the Institute's staff have a direct interest in electronic research or an indirect interest derived from its relation to other projects. Many of these men have formulated research problems and by virtue of their knowledge and leadership have drawn to themselves a following of students. The Research Laboratory of Electronics is conceived as a federation of these groups with a common interest in electronics. By the pooling of

effort, facilities and support can be made available on a large scale not possible to isolated units. By building on the principle of federated activity, the laboratory hopes to gain the advantage of co-ordination without restricting freedom of effort on the part of any individual profession or group.

The Institute is fortunate in having on its staff a large number of men whose interests and experience lie all or partly in the field of electronics. Among them are men who have made important contributions to our knowledge of electromagnetic theory, microwave electronics, mathematical analysis, atomic power, and acoustics.

The laboratory will be under the direction of an executive committee composed of Professor Julius A. Stratton, '23, of the Department of Physics, director; Professor Harold L. Hazen, '24, Head of the Department of Electrical Engineering; Albert G. Hill, Associate Professor in the Department of Physics, associate director; and Professor John C. Slater, Head of the Department of Physics.

Reports and Progress

ONE hundred and twenty-two members and guests attended the 248th dinner meeting of the Alumni Council which was held in Pritchett Hall, Walker Memorial, on January 28. In calling the meeting to order, President A. Warren Norton, '21, paid tribute to the late John D. Mitsch, '20, Associate Professor of Structural Engineering and a member of the executive committee, whose tragic death occurred in an airplane accident on January 18.

The report of the National Nominating Committee, presented on pages 295-297, was read, and the following committee members for Alumni Day, February 23, were proposed and elected by the Council: *General Chairman*: Larcom Randall, '21; *Class Day*: John A. Hrones, '34, chairman, Eugene Mirabelli, '19, George A. Wilson, Jr., 10-44; *Dinner*: Frank R. Shaw, '24, chairman, Donald G. Morse, '21, Parke D. Appel, '22, A. Robert Tonon, '22, David S. McLellan, '37; *Ladies*: Mrs. Leicester F. Hamilton; *Publicity*: Ralph T. Jope, '28, chairman, Henry B. Kane, '24, James Donovan, '28, Beverly Dudley, '35, John J. Rowlands, staff; *Registration*: Donald P. Severance, '38, chairman, Joseph C. MacKinnon, '13, Robert M. Kimball, '33, Wolcott A. Hokanson, staff; *Ways and Means*: Horace S. Ford, staff, chairman, Carl M. F. Peterson, '29, Delbert L. Rhind, staff.

Plans for Alumni Day of February 23 were progressing well, Mr. Randall stated. For the Alumni Day to be held early in June, William L. Campbell, '15, was elected to serve as chairman.

Announcement was made that Harold Bugbee, '20, had been elected by the executive committee to serve as a member of that body to fill the unexpired term of the late Professor Mitsch. A special committee on 25-year anniversary consisting of Alexander D. Harvey, '21, William H. Mueser, '22, Horatio L. Bond, '23, George E. Parker, '24, and John C. Dunbar, '25, was also elected.

Henry B. Kane, '24, Director of the Alumni Fund, announced that in the current year, with two months still to go, Alumni had contributed \$150,400 to the Fund, already exceeding by \$400 last year's peak.

President Compton then touched upon highlights of the latest developments in the Institute's administration. For graduation exercises on February 25, Lieutenant

General J. H. Doolittle, '24, was chosen to give the commencement address. A grant of Alfred P. Sloan, Jr., '95, has made possible the purchase of a new building for the Department of Aeronautical Engineering, and an anonymous gift of half a million dollars for research was also announced by Dr. Compton. The large volume of applications for admission is creating conversion difficulties, particularly since an unusual peak is anticipated for the next few years to provide training to returning veterans. Available facilities are taxed to accommodate as many students as feasible, consistent with the Institute's high educational standards. To aid in alleviating the housing shortage for students living in Cambridge, a new dormitory is planned for erection on Memorial Drive, west of Massachusetts Avenue.

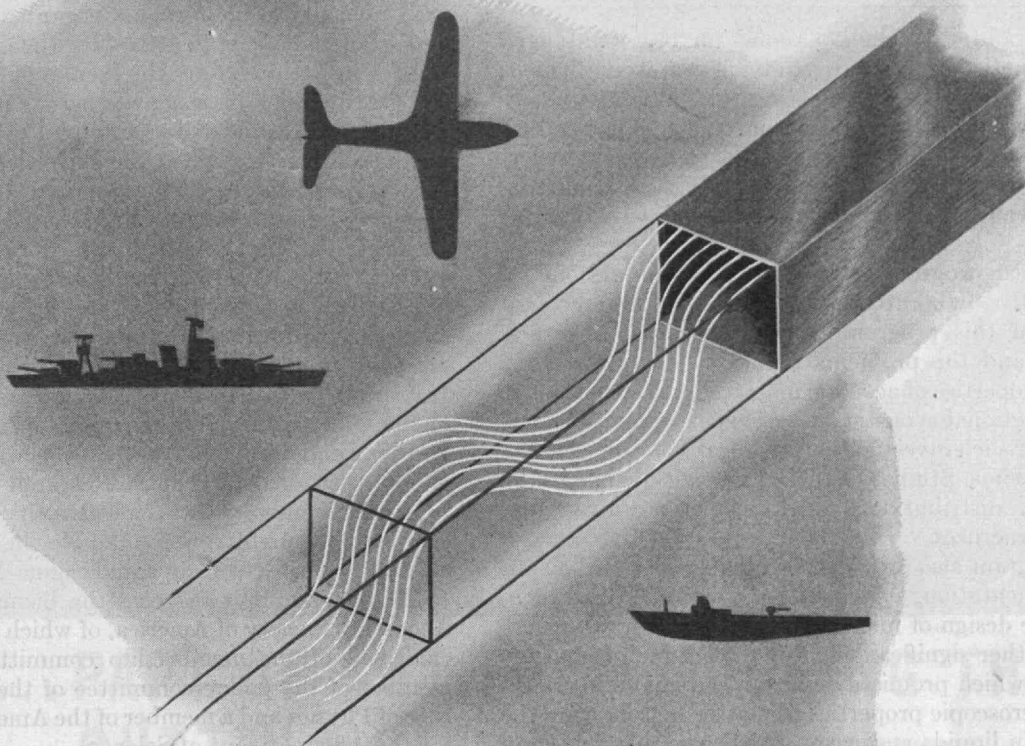
Final speaker of the evening was George R. Harrison, Dean of Science, who recounted interesting aspects of a trip he made during the war to arrange with General MacArthur for a group of scientists to carry on war research projects in Australia. Uneventful for the most part, the trip across the Pacific provided its excitement when trouble developed in the plane's gas lines, and radar was used to locate a landing field on a small mid-Pacific island. In Australia travel was exasperating because railroad tracks of different gauge were often encountered necessitating transfer from one train to another every few hundred miles. Yet this annoyance could be overcome by standardization and agreement of railroad operators. Finally, Dean Harrison, speaking on the atomic bomb, gave a dissertation on atomic energy. In emphasizing the energy derivable from different materials, Dean Harrison compared the energy obtainable from a fragment of uranium ore with that obtainable from such materials as a stick of dynamite, a pat of butter, and a lump of coal.

Acoustics Research

ESTABLISHMENT at the Institute of an Acoustics Laboratory, a new interdepartmental facility in a branch of science which produced important developments during the war, was recently announced by Dr. Compton. One of the primary objectives of the new laboratory is to provide fundamental professional training in a field in which there is now a serious shortage of competent engineers and scientists.

The new laboratory is to be operated under the joint direction of the Departments of Physics and Electrical Engineering and the School of Architecture and Planning and will collaborate with all departments interested in acoustic problems. Richard H. Bolt, Assistant Professor of Physics, has been appointed director of the new laboratory, which will be supervised by a committee consisting of Professor Philip M. Morse, of the Department of Physics, chairman of the committee; Richard D. Fay, '17, Associate Professor in the Department of Electrical Engineering; Professor Julius A. Stratton, '23, director of the Research Laboratory of Electronics; and Professor Lawrence B. Anderson, '30, of the School of Architecture and Planning.

Present facilities at the Institute for research in acoustics include a microphone calibration system installed in an especially sound-deadened room; a sound- and vibration-isolated room adapted for reverberation and other acoustics studies; special (Continued on page 300)



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THE INSTITUTE GAZETTE

(Continued from page 298)

equipment and experimental rooms for investigation of audible sounds; devices for studying ultrasonic sound; and acoustic impedance measuring equipment.

Special apparatus has been constructed for the new laboratory to measure ultrasonic absorption and reflection of materials under water. It was in these fields that notable advances were made in war research on submarine warfare.

A five-year program of research has been laid out for the Acoustics Laboratory. One of the most important divisions of this program will deal with architectural acoustics, and the problems to be studied include the physical properties of acoustic materials and structures as well as functional acoustic design. Special provisions will be made for such investigations by means of experimental full-scale rooms. Studies of special interest include sound absorption, distribution, and transmission in various types of structures.

The program also provides for studies in electro-acoustic instrumentation, which includes investigations concerning the design of microphones and loud-speakers.

Still another significant field is that of high-frequency vibrations which promises important advances in studying the microscopic properties of matter by vibrating the molecules in liquids and gases. Studies in this field may lead to the development of acoustical microscopy. This

part of the program will be carried on in collaboration with the Institute's Research Laboratory of Electronics.

Dr. Bolt, director of the laboratory, who is the son of Dr. Richard A. Bolt of the school of public health at the University of California, was graduated from the University of California in 1933 with the degree of bachelor of arts in architecture. He then took up the study of physics, in which he was awarded his master's degree in 1937 and the degree of doctor of philosophy in 1939, having done thesis research at the University of California at Los Angeles. He carried on special advanced work in Germany in 1933 and 1934 and was a National Research Fellow in physics at the Institute from 1939 to 1940.

From 1940 to 1943 Dr. Bolt was an associate in physics at the University of Illinois and an assistant professor from 1943 to 1944. Last year he was appointed assistant professor of physics at the Institute.

From 1943 to 1944 Dr. Bolt was scientific liaison officer of the Office of Scientific Research and Development in London, and from 1944 to 1946 he was chief technical aide of the National Defense Research Committee.

His academic career at the University of California won for him the Houghton Memorial Key in 1939. He was also elected to Phi Beta Kappa and Sigma Xi.

In 1942 Dr. Bolt received the biennial award of the Acoustical Society of America, of which he is a fellow and chairman of the membership committee. He is also a member of the policy committee of the American Institute of Physics and a member of the American Association for the Advancement of Science.

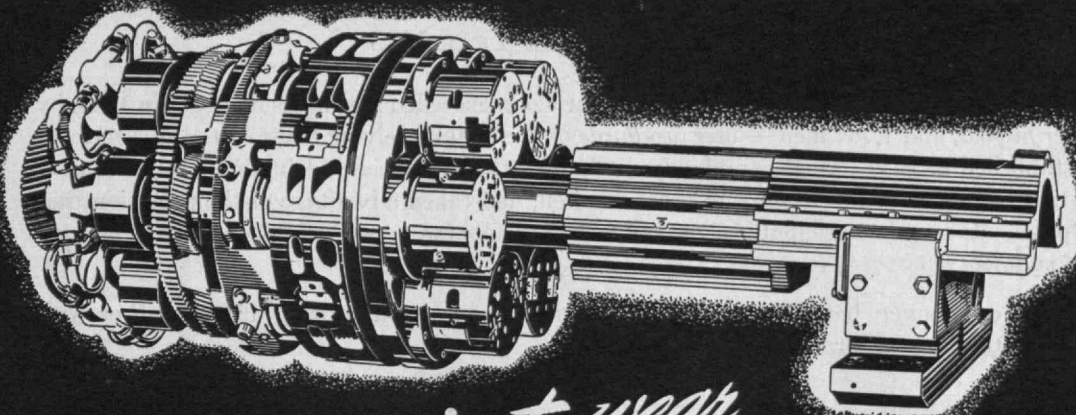
(Continued on page 304)



DOUBLE HONORS

... came to Major General Roger B. Colton, '20, on January 8, when General H. H. Arnold made presentation of the Legion of Merit and the Distinguished Service Medal. The citation for the Legion of Merit reads: "Major General Roger B. Colton performed outstanding services from August, 1941, to June, 1943, as chief of the matériel branch and later director of the supply service, Office of the Chief Signal Officer. In charge of supplying communication equipment, including radar, to the Army and to many of the United Nations, he supervised all phases of supply from the earliest stages of research through delivery. He discharged these responsibilities with extraordinary executive skill and with singular comprehension of the diverse technical and industrial fields which his work encompassed. These talents, coupled with his great vigor, initiative, and ingenuity, his foresight and sound judgment, and his admirable qualities of leadership, guided all activities under his control to record production despite critical shortages of materials. General Colton's performance of duty contributed materially

to the war effort." The Distinguished Service Medal carries with it the following citation: "Major General Roger B. Colton distinguished himself from September, 1944, to September, 1945, by the exceptionally meritorious manner in which he discharged heavy responsibilities as air communications officer of the Air Technical Service Command, Wright Field, and electronics adviser to the assistant chief of Air Staff-4, Headquarters Army Air Forces. He directed the transfer from the Signal Corps to the Army Air Forces of the research, development, procurement, storage, and issue of communications items and other electronic equipment peculiar to the Air Forces. His contributions to many electronic devices, including developments which made possible increased resolution leading to the application of radar to strategic bombing, fire control, and guided missiles, were outstanding and brought about the operational use of these implements years ahead of the most optimistic estimates of the scientific world. By his keen vision, professional knowledge, perseverance, and tireless efforts, General Colton contributed notably to the successful prosecution of the war."



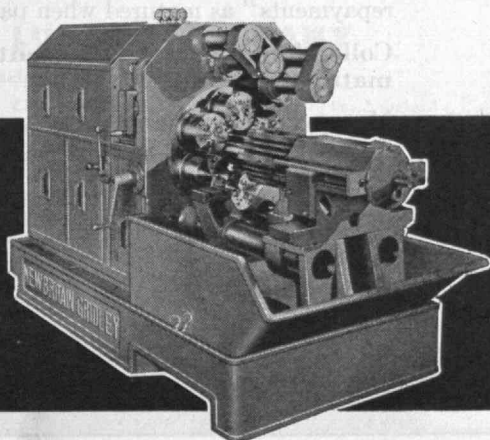
*Cradled against wear
during index*

.....PART OF THE FRAME DURING THE CUTTING CYCLE

The spindle carrier assembly is the very heart of an automatic machine . . . key to its accuracy and dependability. On New Britain Automatics, the spindle carrier is automatically lifted out of contact with the frame of the machine during index. When index is complete it is not only re-seated but clamped to the frame, becoming in effect an integral part of it. This exclusive New Britain feature practically eliminates wear and weave during the cutting cycle . . . assuring the continued accuracy for which New Britains are famous. Other exclusive features provide unmatched speed and accuracy. The sum of them all is PRODUCTION . . . more parts per dollar.

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THE TECHNOLOGY LOAN FUND BOARD

REPORT FOR THE YEAR 1945

Current principal repayments during the year again exceeded new loans made, as in 1944, by *over fivefold*, and 1,762 men — *over two-thirds* of the 2,608 receiving loans since the Fund was established in 1930 — had completely discharged their financial indebtedness by December 31, 1945. Many of the 1,762, and others as well, had taken advantage of the provision that "payments may be anticipated," for \$72,830.50 of notes were paid off during 1945 *in advance of maturity*.

The data given below summarize the Fund's transactions during 1945 together with cumulative figures for the past fifteen years.

THE TECHNOLOGY LOAN FUND BOARD

K. T. Compton,
H. S. Ford,
B. A. Thresher,
D. L. Rhind, *Secretary*
H. E. Lobdell, *Chairman*

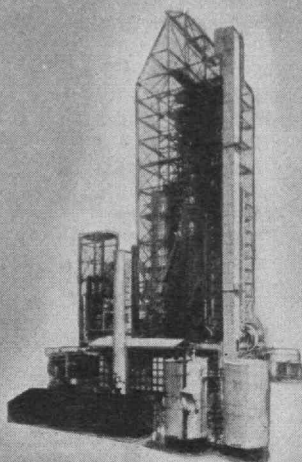
Cambridge
February 1, 1946

Cumulative Record of the Technology Loan Fund from its establishment in 1930 up to December 31, 1945, and the corresponding figures up to December 31, 1944, together with net changes during 1945.

ITEMS OF OUTGO	At Dec. 31 1944	At Dec. 31 1945	Net Changes during 1945
Number of men receiving loans	2,584	2,608	+24
Total amount loaned	\$1,881,865.75	\$1,895,273.75	+\$13,408.00
Average per capita loan	\$728.27	\$726.71	-\$1.56
ITEMS OF INCOME			
Number of men whose indebtedness has been completely discharged	1,572	1,762	+190
Principal repayments <i>in advance</i>	\$425,376.87	\$498,207.37	+\$72,830.50
Other principal repayments	\$854,655.47	\$924,652.50	+\$69,997.03
Total principal repayments	\$1,280,032.34	\$1,422,859.87	+\$142,827.53
Total principal matured, considering "advance repayments" as matured when paid	\$1,321,421.22	\$1,460,825.98	+\$139,404.76
Collection Ratio, i.e. percentage of total maturities paid	96.9%	97.4%	+0.5%
Matured principal in arrears	\$38,991.53	\$32,762.12	-\$6,229.41
Actual "written off" accounts	\$2,397.35*	\$5,203.99**	+\$2,806.64
Total maturities unpaid	\$41,388.88	\$37,966.11	-\$3,422.77
Interest received	\$187,734.33	\$199,235.78	+\$11,501.45
NOTES OUTSTANDING	\$599,436.06	\$469,956.53	-\$129,479.53

* Of seven men, deceased prior to 1938, and not covered by insurance.

** Including also \$2,807 of losses incurred in "legal settlements" during 1930-1945, previously debited against administrative operating expenses of M.I.T.



STARTED UP

May 12, 1945

**TIDE WATER ASSOCIATED TCC UNIT WAS
SHUT DOWN FOR INSPECTION**

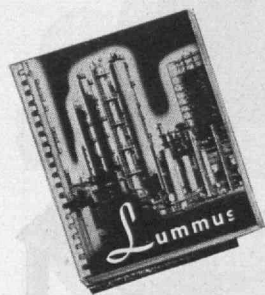
January 7, 1946

When the 10,000 barrel per day Thermoform Catalytic Cracking unit of the Tide Water Associated Oil Company, Bayonne, was shut down for inspection on January 7, it had been on stream 240 days.

Sprockets on elevator drive were reversed to balance wear. Elevator chains were shortened by removing two links. No major maintenance was necessary. Kiln linings and internals were in perfect condition. The total turnaround labor amounted to approximately 10,000 man hours.

Long initial runs are characteristic of Lummus plants. They reflect sound design, good engineering, careful construction . . . they presage the dependable operation repeatedly demonstrated in the 26 TCC units . . . 8 Polyform plants . . . 3 Houdry plants . . . 10 Alkylation units . . . 6 Isomerization units . . . 5-100 octane plants and many other Lummus contributions to the war time expansion of the petroleum refining industry.

If you have the problem of converting existing facilities to meet competition . . . if you are planning the installation of modern plants for the economical production of high octane motor gasoline, Lummus will be glad to co-operate with you in an unbiased study of the processes best suited to meet your refining and marketing conditions. Every Lummus study includes a thorough analysis and presentation of the economics of the proposed installation.



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Lummus
PETROLEUM REFINING PLANTS

THE INSTITUTE GAZETTE

(Continued from page 300)

Enrollment Trends

ALTHOUGH unprecedented opportunities exist in a virtually all fields of science and engineering, a recent survey conducted by Professor B. Alden Thresher, '20, Director of Admissions, shows that interest in admission to the Institute centers largely in the fields in which wartime applications were prominent. At the same time, there is a paucity of applications for enrollment in a number of branches of science and engineering where the need for well-trained personnel is expected to be substantial.

Should the M.I.T. survey be typical of enrollment trends in technical institutes throughout the country, a probable dislocation of the nation's engineering educational program and engineering needs is foreseen. The present heavy interest exhibited in electrical, mechanical, and aeronautical engineering could result in training more men than would normally be employed in these three fields; at the same time, serious shortages may become apparent in the fields of geology, meteorology, food technology, biology, metallurgy, and business and engineering administration.

Undoubtedly the publicity which a number of wartime developments have received has had an important share in channeling interest into those phases of engineering

Course	Graduate School Applications	Total Undergraduate Applications	Pre-war Enrollment Total (Graduate and Undergraduate) % of Total
Civil and Sanitary Eng....	5.4	4.7	3.4
Mechanical Engineering...	12.1	16.8	14.4
Metallurgy.....	4.9	1.4	5.2
Architecture and Planning	2.1	4.5	3.7
Chemistry.....	9.8	3.6	6.6
Electrical Engineering....	15.5	28.1	13.2
Biology and Food Technology.....	2.3	0.7	3.8
Physics.....	18.7	3.9	5.0
General.....	0.7	2.6
Sanitary.....	0.4
Chemical Engineering....	15.5	10.0	13.7
Geology.....	0.6	0.4	1.4
Naval Architecture.....	0.3*	1.4	6.9
Meteorology.....	2.0	0.6	3.7
Business and Engineering Administration.....	3.2	5.6	9.0
Aeronautical Engineering..	4.3	15.0	5.9
Building and Engineering Construction.....	0.1	2.1	0.7
Mathematics.....	2.8	0.5	1.2
	100.0	100.0	100.0

Number of Applications... 1121

1915

*Exclusive of United States Navy officers

which required large groups of personnel during the war. Service men in particular have been inclined to follow those fields of engineering in which they were engaged

(Continued on page 306)

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MULTI-SPEED SURFACE COATING SYSTEM

Extraordinary flexibility! That is the No. 1 requirement for the operation of this conveying system. It is part of the modern infra-red drying assembly shown at right which handles a variety of sizes, shapes and grades of material, calling for infinite speed control.

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Model 4½ DB
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Ratio: 240 to 1



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THE Bell System was big before the war, but it has to be bigger in the future. The needs of the nation have grown and it's our job to keep pace with those needs. We're spending close to two billion dollars in the next few years for expansion and improvement.

Size brings responsibilities and the Bell System aims to be big in more than size. The over-all policy is to give the best of service, at the lowest possible cost, to every one using the telephone.

BELL TELEPHONE SYSTEM



THE INSTITUTE GAZETTE

(Continued from page 304)

during the war, for a very definite correlation is evident between the course preferences of service men and their work in radar, radio communication, aviation, and other wartime activities.

It is not expected that in all cases entering freshmen will continue for four years in the courses for which they have applied for admission. Even making reasonable allowance for changes in courses which students often make in their second year, unmistakable trends are still apparent.

An additional feature disclosed by the survey is that there is a discrepancy between the preferences for courses at the graduate and undergraduate levels. In the graduate school, applications for enrollment in physics, meteorology, chemistry, and mathematics are proportionately greater by a considerable factor than applications for undergraduate courses in the same subjects. At the same time, graduate study in electrical engineering and aeronautical engineering makes less appeal than undergraduate study in these popular branches of engineering. Of the entering freshmen 33.3 per cent chose to follow electrical engineering, and 16.7 per cent aeronautical engineering, whereas for students entering with advanced (undergraduate) standing, 23.1 per cent have preferences for electrical engineering and 13.5 per cent for aeronautical engineering. In the graduate school, 15.5 per cent of the applications for admission state preference for electrical en-

gineering, and 4.3 per cent of graduate applications are for study in aeronautical engineering.

The table shows the proportion of persons applying for admission for each of the Institute's courses, for the Graduate School, and for all undergraduates, compared with the distribution of pre-war registration as of November, 1940. Although it should be pointed out that the figures for admission applications may not reflect accurately the admissions which will be granted at the present time, it is believed that the figures do show the rather pronounced change in emphasis in engineering education resulting from the war.

Domestic Commerce Director

THE appointment of Brigadier General Albert J. Browning, '22, as director of the Office of Domestic Commerce, announced by Secretary of Commerce Henry A. Wallace on January 11, brings to an Institute Alumnus the responsibility for formulating the program and perfecting the organization by which the Department of Commerce will discharge its obligations in promoting and supporting the nation's industry and domestic commerce.

In his new post, General Browning will have under his direction the commodities and manufactured products sections of the Bureau of Foreign and Domestic Commerce, together with the sections responsible for wholesale and retail distribution, transportation, building construction, and the service industries.

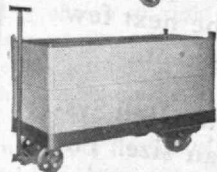
(Concluded on page 308)



MARKET FORGE COMPANY STANDARDIZED MATERIALS HANDLING EQUIPMENT

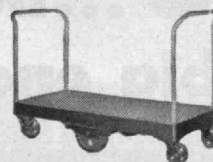
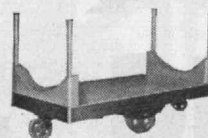
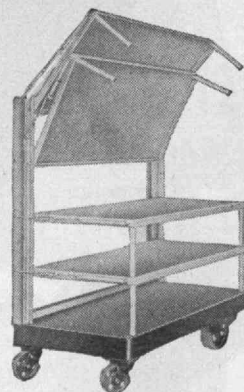
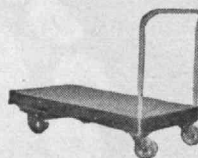
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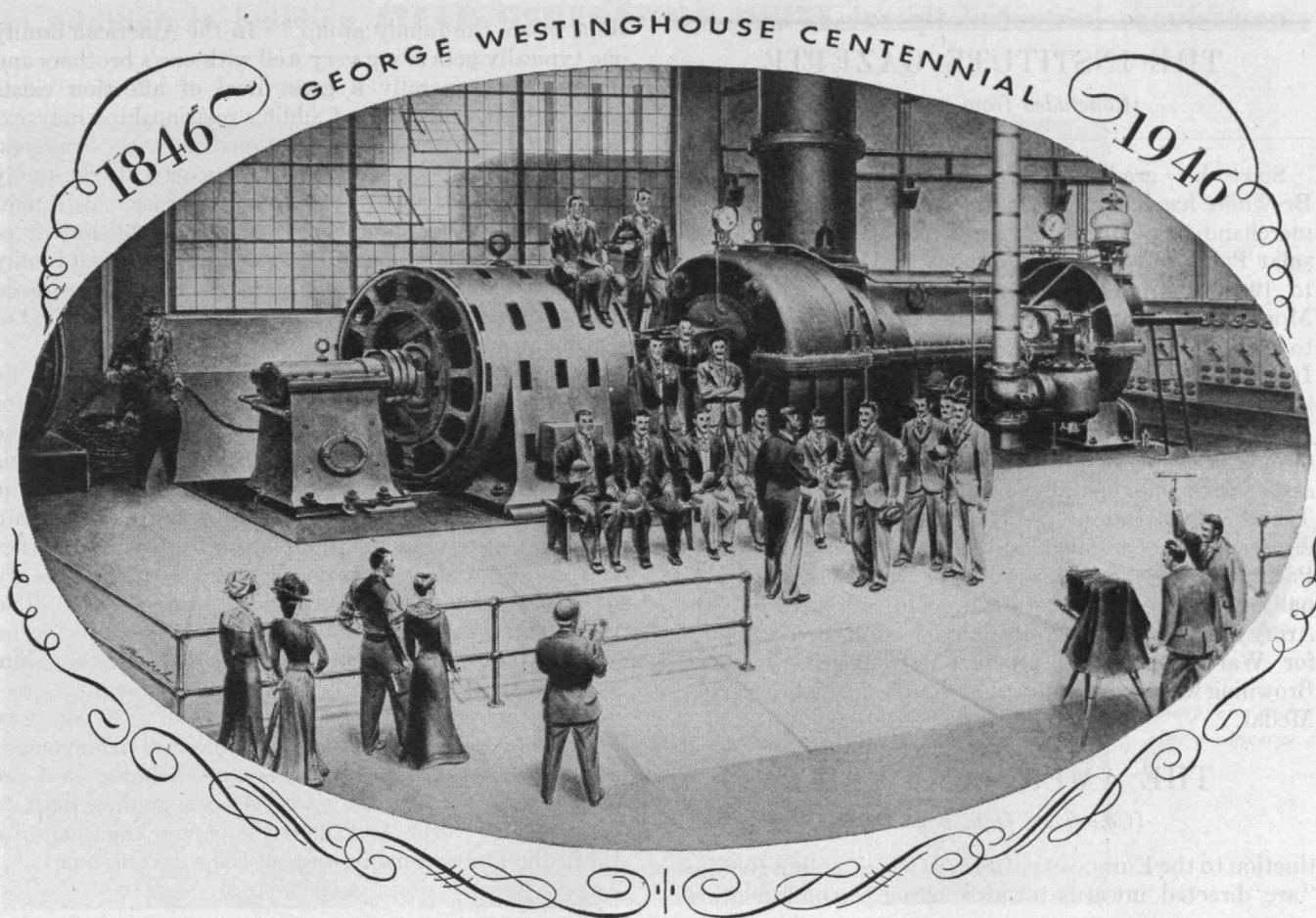
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WHIRLING POWER

EARLY in life, George Westinghouse dreamed of a new and better source of power that would make obsolete the ponderous *reciprocating* steam engine of his day.

Even as a boy he had wrestled with the problem—securing his first patent on an engine of the *rotary* type when only 19 years old.

Years later, Westinghouse heard the exciting news about a *new type of rotary engine*, developed by Sir Charles Parsons in England. It was a steam turbine . . . using *jets of steam* to drive whirling blades.

Here was the answer to the problem that had fascinated Westinghouse since boyhood—and he promptly acquired

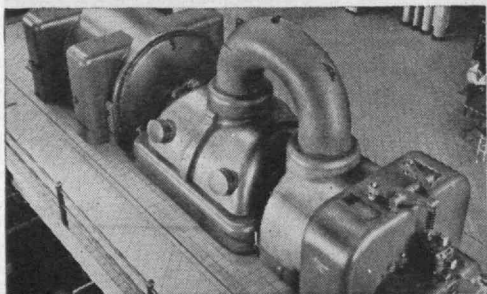
the rights to manufacture the turbine in America.

The next few years were busy ones for George Westinghouse. With characteristic energy, he applied all his inventive genius in developing the still crude steam turbine into a *compact power source* for generating electricity.

Then, in 1900, Westinghouse installed a 2000-kilowatt steam turbine generator at Hartford, Connecticut—by far the largest then in existence.

It was the *first* practical central station turbine generator in America . . . a *new* application of whirling power that was to bring electricity to people all over the world.

Westinghouse
PLANTS IN 25 CITIES OFFICES EVERYWHERE



TODAY . . . America annually produces more than two billion kilowatt hours of electricity and more than three-fourths of the generating capacity in America is in steam turbine generators. Westinghouse manufactured a large share of these turbine generators—some developing more than 200,000 horsepower each. In 1946, more than a million horsepower of Westinghouse steam turbines will go into American power plants.

THE INSTITUTE GAZETTE

(Concluded from page 306)

Since his graduation from the Institute, General Browning has had an extensive career in advertising and merchandising. He was general manager of the Peninsular Paint and Varnish Company in Detroit from 1931 to 1934, division and group merchandise manager of Montgomery Ward and Company in Chicago from 1934 to 1938, and president of the United Wall Paper Factories, Inc., in Chicago, for the next four years until he entered the Army.

During the war, General Browning served as director of purchases for the War Department from 1942 to 1944, assistant to chief of staff, communication zone, European Theater of Operations, in 1945 and, during the same year, director of procurement and disposal division, Western Pacific Theater. For this work, in which he was principally responsible for setting up and administering the Army's purchasing program and for formulation of policies for War Department procurement agencies, General Browning was recently awarded the Distinguished Service Medal.

THE AMERICAN FAMILY

(Concluded from page 284)

tion to the European pattern, in which sibling rivalries "are directed inwards towards actual personal relation-

ships inside the family group."⁴ In the American family one typically gets along very well with one's brothers and sisters, and generally a great deal of affection exists among them. This ease of sibling relationships may explain the American's easy relationships with strangers, his ability as a good mixer. A European will commonly not speak to strangers, whereas to an American, a stranger is an immediate stimulus toward the establishment of friendly relations and an exchange of personal and family histories. The American, compared with the European, is a warm-hearted person. He is capable of a good deal of sentiment and affection.

In a sense, the American never really grows up; he never grows beyond the ideals which were patterned for him as a child; the male remains an overgrown boy, the female an overgrown girl. The American prolongs his youthful habits and ambitions into middle age. The emphasis in America is definitely upon youth. To remain youthful is itself an ideal to maintain. Hence, in no other land in the world do grandmothers and grandfathers try so consistently to resemble their grandchildren. The American, in short, is in many ways best described as an arrested adolescent who, therefore, has within him great potentialities for growth and development.

When the ethos of American culture shall swing away from the overweening emphasis on material achievement to a saner view of things, there is a good chance that the American character may yet serve as a guiding light to the rest of the world. And there is hope, for Americans are still in the growing-pains stage of their development.

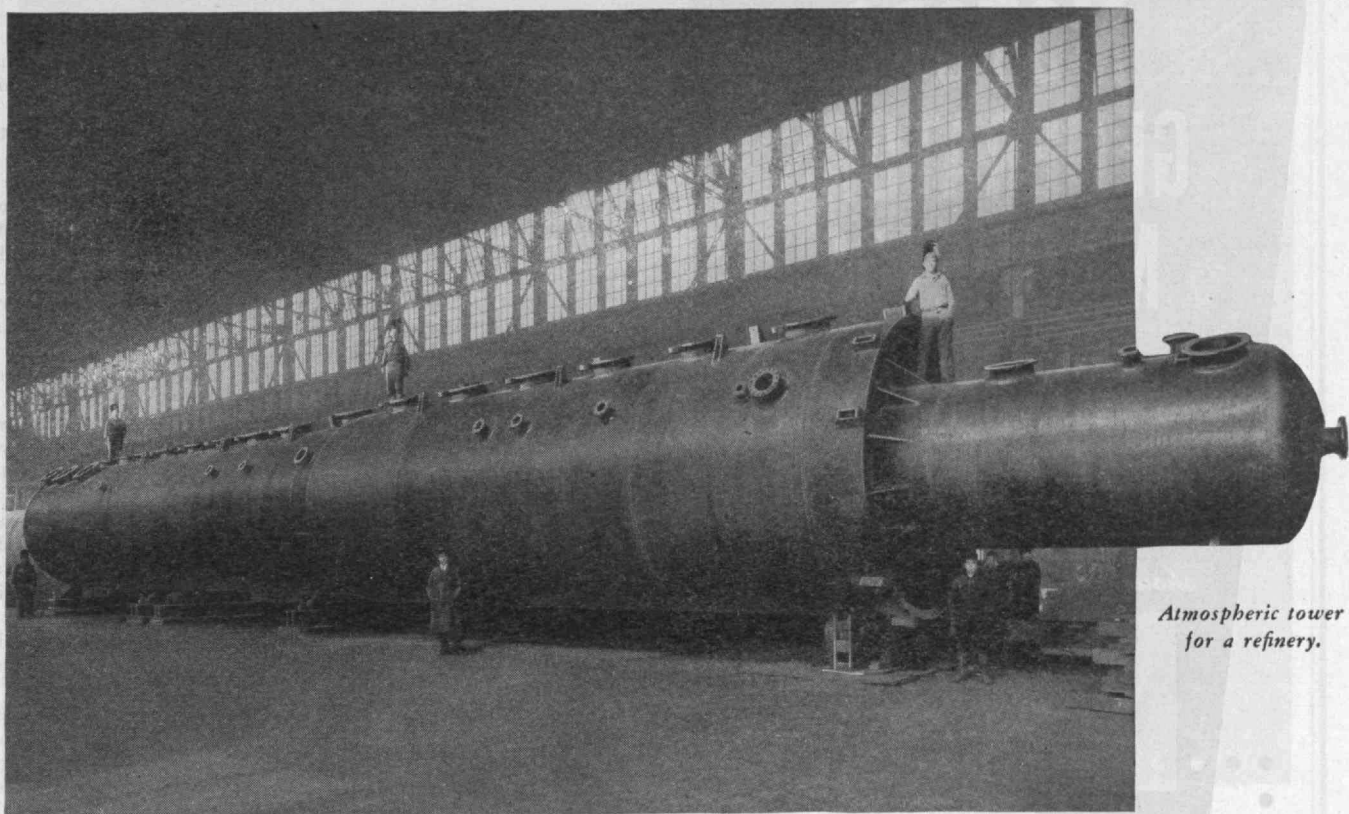
⁴ Mead, *op. cit.*, p. 111.



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for a refinery.*

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But why should a company primarily engaged in

the design and manufacture of boilers, fuel burning and related equipment be builders of vessels such as those described? The answer is simple enough. The facilities and operations used in the manufacture of boilers are identical to those required for the fabrication of all types of pressure vessels. And Combustion Engineering's facilities for boiler manufacture are the finest available. They have to be to permit the production of the most extensive line of boilers on the market in sizes ranging from 25 horsepower to the highest capacity boilers in service.

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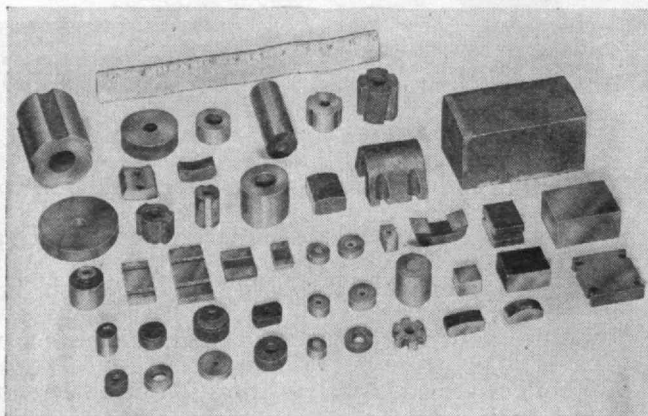
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Specialists in the Manufacture of
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MAIL RETURNS

(Concluded from page 272)

Page 223: "... the crystallization of rock marks only one date in a much longer history of the earth." Any reader would suppose that rock crystallized once and for all time at one date in the earth's history — whereas rocks are crystallizing somewhere every day. I wrote about the crystallization of those particular rocks upon which the estimate of 1,500,000,000 years is based.

On the same page are two more errors in one paragraph: "My memory easily recalls the time when geologists accepted a story of the earth. . . ." Now, geologists *accept* the law of gravity, which they did not discover, but they didn't accept the story of the earth — they *knew* and *proved* "a story so complex that it must be long, so long that it covered a period which exceeded the time which astronomers of that day allowed for the formation of the whole solar system."

The formation of the solar system is taken to mean the early, dynamic period during which the planets of the solar system were formed out of the sun. This is not what I wrote. The geologists of that time knew a story of the earth which required more time than astronomers allowed for the entire history of the solar system from its formation to the present day.

On page 223, we read: "They [granites] could become part of our rock sequence in just two ways, by encroachment or by replacement." I did not write this; "encroachment" is a general word used to include all processes of granitic invasion. The correct words would be "by intrusion or by replacement."

On page 226, we read: "We can date the depths and heights that rim the Pacific. . . ." The word I wrote was "depths" which is not at all the same thing as "depths."

Perhaps all this sounds small; it hurts me to write. Few of your readers will bother to read this essay, and it won't matter much if those few are misinformed by it. But some will read it and will care; and this letter is addressed to those. I appeal to those who are warmly interested in their earth to put the letter side by side with the essay and smooth out the wrinkles of inconsistency. And I thank the Editor for granting me the means to smooth them out.

Cambridge, Mass.

The Review regrets exceedingly that an unfortunate departure from its customary editorial procedure has given Professor Morris cause for the above letter. — Ed.

Solution

FROM WILLIAM SCHULTZ, JR.:

By now I presume you have been flooded with solutions to the apparently baffling problem mentioned by Mr. Langdon in "Mail Returns" in the January issue. No differential analyzer is needed, so we can save the wear and tear on this wonderful instrument. Since the fly is in the air for the same time that it takes the two cyclists to meet (one-half hour), the fly will travel 10 miles at the rate of 20 miles an hour. Bloomfield Hills, Mich.

Rockets

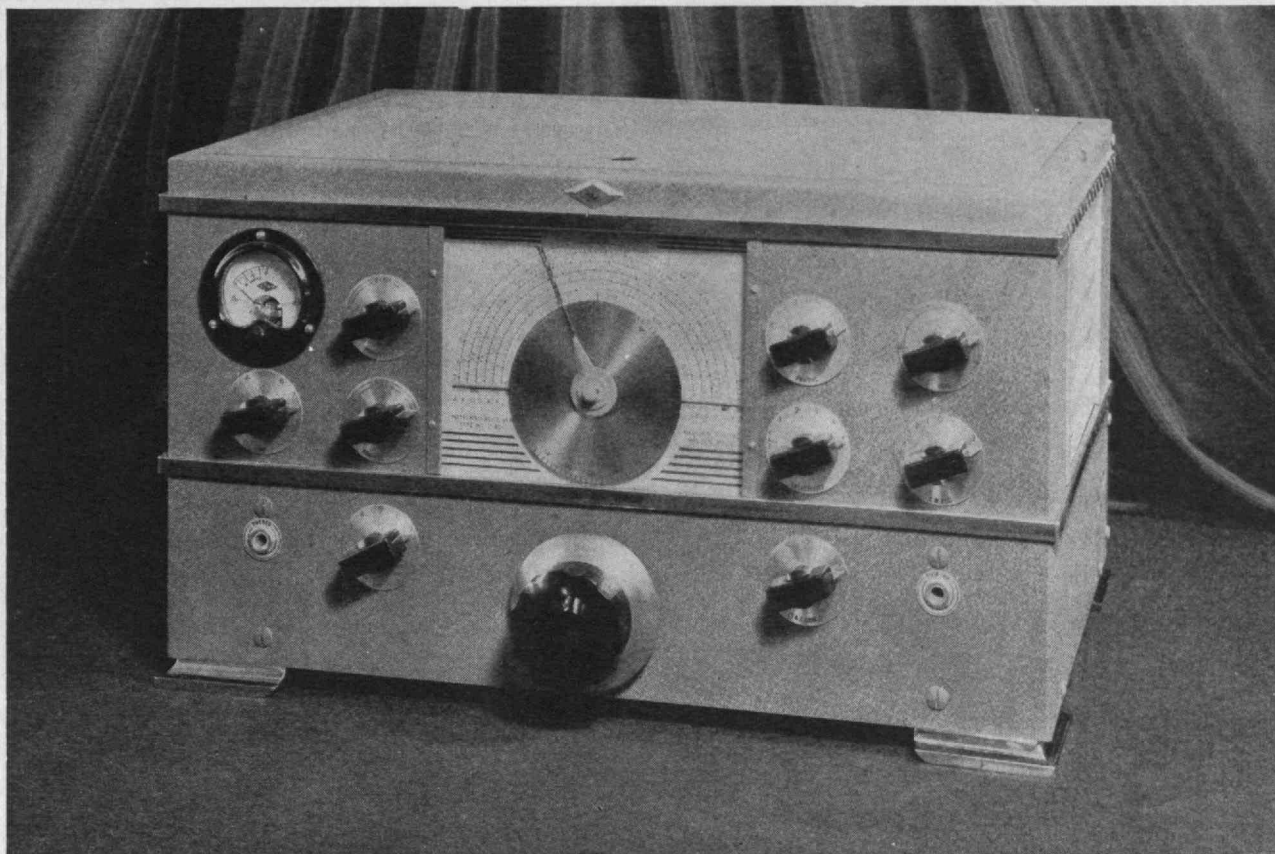
FROM EDWARD F. BRADY, '41:

Could you tell me where I may obtain additional information about the rocket weapons described on page 158 of the January Review? Are there public reports available at this time published by any of the Allied governments?
Seattle, Wash.

Willy Ley, author of the article on rockets, replies:

So far only one rather comprehensive publication on German rocket developments has been issued, a lecture by Perring in London, which was delivered to the Royal Aero Club on November 10, 1945, and published by the club. This lecture, enlarged and annotated, with abstracts from the discussion that followed, will be reprinted by the Royal Aero Club in its *Bulletin*, presumably in the March issue.

Our Army and Navy departments have also promised comprehensive publications about German research (especially rocket development), but no publication date has been set so far. You will find the background for the whole development traced in my book, *Rockets*; and a short article on the rocket motor of the *Natter* and of the Me-163 has just been published in the January issue of *Aviation*.



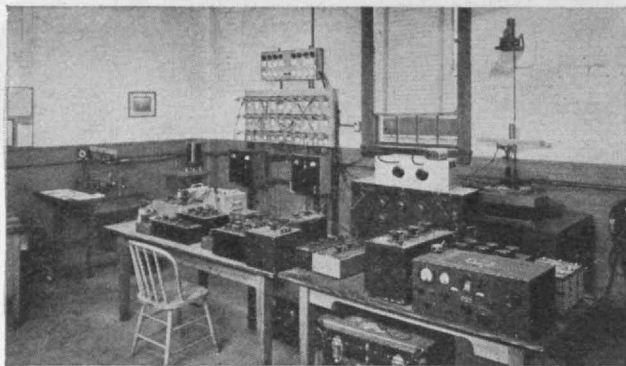
THE NC-2-40C

THIS superb new receiver reflects National's intensive receiver research during the war period. Many of the NC-2-40C's basic design features stem from the NC-200, but to them have been added circuit and construction details that set it apart as a performer. Stability and sensitivity are outstanding. A wide range crystal filter gives optimum selectivity under all conditions. The series-valve noise limiter, the AVC, beat oscillator, tone control and S-meter are among the many auxiliary circuits that contribute toward the all-around excellence of the NC-2-40C. See it at your dealer's.



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Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than half a century.

THE INDUSTRIAL WAY OF LIFE

(Concluded from page 288)

office buildings, apartment hotels, and tenements, but it floods over into the hinterland of the industrial dormitories (the suburbs) and the "rurban" retreats of the financially successful.

The future of industrial urbanism has become very uncertain. The reasons are cogent. The new air age marks the big city as the doomed target of the superbombers of tomorrow. Moreover, the great cities are slowing down in their growth rates, and the suburbs have become the recipients of the back-flow. The industrial city is not reproducing itself; its population deficit reaches at least 30 per cent in some instances and averages 15 per cent on the whole. As the community counterpart of the big enterprise, the big city finds itself enmeshed in endless inefficiencies and wastes of human resources. The massive patterns of the city — e.g., its mammoth recreations, supermarkets, crowded tenements — grind the personal relations of industrial man exceedingly fine and thin, and they create, as two critics have recently said, "a fast rippling" but "shallow volume of life."³ Here again one is confronted with the tragic disjunction of the inner and outer structures of industrialism.

³ F. L. Wright and Baker Brownell, *Architecture and Modern Life* (New York: Harper and Brothers, 1937), p. 80.

ZENITH OR NADIR?

(Continued from page 292)

rent to penetration of the solid lithosphere. What of the hydrosphere, the great waters which compose two-thirds of the globe's surface?

Absence in water of oxygen in the state which may be respired by man was early and readily overcome through development of diving apparatus. Temperature in the oceans is not related exclusively to depth but is also governed by currents. In any event, its range from 27 to 88 degrees F. is such that only suitable clothing would be required to assure complete comfort. Light, totally lacking below about 3,000 feet of ocean depth, is readily provided. But — and here we find the secret of the ocean's aloofness — water is so many times more dense than air that pressure changes are correspondingly exaggerated. We noted an air-pressure differential of but four pounds per square inch between sea level and 10,000 feet of altitude. At this distance below the surface of the sea, water pressure which was zero at the surface has increased to more than two tons per square inch!

For reasons which will be given it has been necessary in most forms of diving apparatus to maintain an internal pressure approximately equal to that of the surrounding water. The simple diving helmet which rests on the shoulders of the user is open at the bottom; to prevent water from entering by merely compressing the air within the helmet, the pressure of this air must be increased as the diver descends. The next development, a helmet joined at the neck to a flexible but air- and watertight suit, allows the diver to control his buoyancy by increasing or diminishing the flow of air, so that a greater or lesser amount remains within the suit.

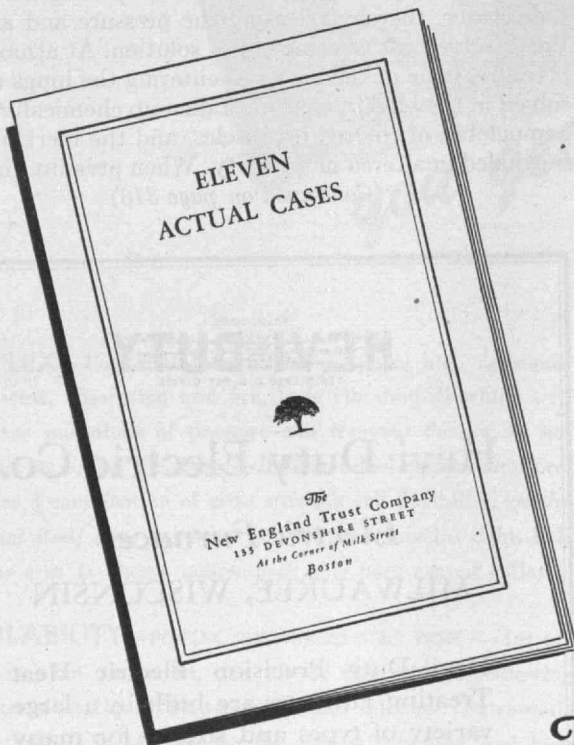
The obvious development of an inflexible suit or chamber provided with some other means of buoyancy control has been limited by the difficulty of designing long and

(Continued on page 314)

Eleven Practical Illustrations of Successful Estate Planning

The booklet here illustrated discusses the cases of eleven actual property owners who, through revising their estate plans, were able to provide greater security for their families and, in many instances, to achieve notable savings in taxes.

Since the average individual cannot be expected to be aware of all the problems involved in planning the settlement and distribution of an estate, we believe you may find this booklet interesting and helpful. We shall be glad to send it to you, on request.



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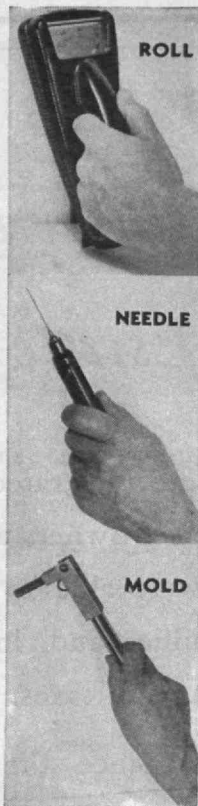
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ZENITH OR NADIR?

(Continued from page 312)

flexible air hoses with walls sufficiently rigid to withstand crushing water pressure when air pressure within the hose is much lower. This obstacle has, with some degree of success, been circumvented by eliminating the air hose and providing in its stead an air regeneration device contained within the diving apparatus. This device depends upon absorption of expired carbon dioxide in caustic soda and its replacement with oxygen from tanks of the compressed gas. Nitrogen, the inactive gas which composes about four-fifths of the air, is recirculated indefinitely.

This nitrogen constituent of air is what limits pressures to which the human organism may be exposed and hence the depths to which man may dive. Beebe's bathysphere, a rigid globe with contained air apparatus, was adequate for scientific observation, but to perform the useful work which is the reason for his descent, the professional diver must use a suit, and for greatest working efficiency he prefers one of the flexible type. After a descent of but 33 feet, the diver finds himself subjected to a pressure of two atmospheres — twice what he experiences at the surface. Solubility of gases in fluids is increased with augmented pressures, as anyone may confirm in opening a bottle of soda water, thereby releasing the pressure and allowing the dissolved gas to come out of solution. At atmospheric pressure, none of the air gases entering the lungs are dissolved in the blood; oxygen is taken up chemically by the hemoglobin of the red corpuscles, and the inert nitrogen is exhaled unaltered in quantity. When pressures increase

(Continued on page 316)

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With all the experience gained in war production, Johnny Gear is building better gears for the makers of peacetime machinery — gears of all material, made to blueprint and specifications. The "know how" of Diefendorf engineers can be helpful in solving your gear problems.

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GALVANIZED STEEL HOSE, BRONZE
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For engineering data on PENFLEX GALVANIZED STEEL, BRONZE HOSE and COUPLINGS—write for Bulletin 52-9.

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—for heavy duty service. Interlocked construction provides maximum strength with simple construction.

TYPE HR HIGH RIDGE—medium duty hose. High ridge joint affords greater relative motion between corrugations than does the Standard Four-wall Interlocked.

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All of the three types can be reinforced by the addition of braiding and armor.

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Both types can be supplied in brass or malleable iron . . . plain or reinforced.

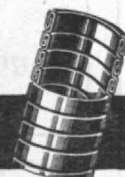
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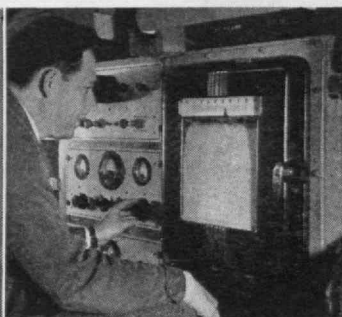
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WHERE
Printing
IS STILL A CRAFT

ZENITH OR NADIR?

(Continued from page 314)

markedly, a certain amount of inhaled air goes into solution in the blood, in this way being transported quickly to all the body fluids and tissues. Oxygen thus dissolved is utilized for tissue respiration, but nitrogen remains in solution. Although this in itself does no harm, when pressures decrease the process is reversed; and if the change is too rapid for the dissolved nitrogen to be returned to the lungs and there expired, the body fluids effervesce, giving off bubbles of nitrogen which produce the dangerous, even fatal, condition called bends. Certain tissues, such as the fibrous tissue at the joints, take up nitrogen slowly but are correspondingly retarded in releasing it; hence it is here that symptoms are most likely to appear.

Clearly the solution of this difficulty is slow decompression or return to normal pressures; such time criteria have been worked out for the various depths and times of immersion. For example, after working an hour at 48 feet, the diver may return to the surface within $1\frac{1}{2}$ minutes and may do this as a continuous ascent. In contrast, after working but 10 minutes at 276 feet, the diver must ascend in not less than 76 minutes, stopping for prescribed intervals every 10 feet, the last stop being 20 minutes at 10 feet below the surface. The essential impracticality of diving operations at great depths is patent in view of these 76 minutes as minimal decompressing time, plus whatever time is required for descent (this, however, being ideally as short as possible), to achieve but 10 minutes of working time. An interesting feature of the decompression formula is the requirement that stops be longer as the diver nears the surface. Regarding this in terms of pressure readings of the air gauge, pressures over 30 pounds per square inch may be allowed to drop at the rate of 1 pound a minute. In the final range of 10 to zero pounds the safe rate of decrease is but 1 pound in 5 minutes.

Elihu Thomson's universal genius found an application in the problems of diving. Knowing that pure oxygen cannot be breathed at the increased pressures involved, he proposed a synthetic air in which helium replaces nitrogen. In addition to being 40 per cent less soluble than nitrogen in the body fluids, helium, with a molecular weight only one-seventh as great, has a considerably higher diffusion rate and is therefore released more readily through the lungs.

A final problem of diving is the increased toxicity of carbon dioxide at high pressures, making large volumes of air necessary at greater depths to assure adequate ventilation. For example, at the surface $1\frac{1}{2}$ cubic feet of air a minute is ample for the diver; whereas at 210 feet, 11 cubic feet a minute, on the basis of air at atmospheric pressure, is required.

Thus are highlighted the reasons why man has abhorred the depths of earth and sea.

But, it may be asked, what of the natural deep holes? What of the caves, sink holes, chasms, abysses — the bottomless pits? For, in many regions, local lore has it that certain of these dark and forbidding openings in the earth are indeed without bottom. Thus anything of which the compass exceeds man's comprehension is for him without beginning and without end.

First, all natural pits have bottoms. An intrepid and skilled speleologist will inevitably reach or sound a lower limit to any explored cave and usually, in terms of the

(Continued on page 318)

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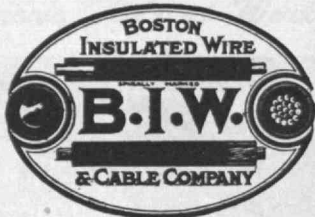
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ZENITH OR NADIR?

(Continued from page 316)

depths we have been considering, at a level not far below the mouth. This is axiomatic, because all such passages are present or former water courses; hence they must discharge no lower than the level of the water table.

And now will appear why natural abysses have been ignored in this consideration of true penetration into the earth. Abysses are mountain phenomena; if a hole of any depth is to terminate above the water table, it must originate at a high altitude. For instance, the deepest known abyss in France, the Gouffre Martel in the Pyrenees, as measured by its discoverer, the fearless Norbert Casteret, was found to be 1,566 feet in depth. But its upper opening, high on a mountain slope, is at the altitude of 9,225 feet. Hence even this titanic gulf does not approach sea level. This being true of all natural abysses, they are immune to the blistering, increasing heat which seeks to drive man from the pits he has the temerity to drive below the earth. Caves are, in fact, delightfully cool and isothermic places, those in the United States ranging from 48 to 56 degrees F. throughout the year, and varying but 4 degrees throughout the year in a typical chamber.

Man is the only organism possessed of scientific curiosity and desire for material gain which impel him deliberately to fare beyond the limits of height and depth within which he prospers. Other living forms, devoid of such instincts, have developed adaptive powers which permit them not only to travel to, but to remain and flourish at, extremely high and low levels. Certain mammals thrive at altitudes over 16,000 feet; birds have been

(Concluded on page 320)

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ZENITH OR NADIR?

(Concluded from page 318)

observed to live at 27,000 feet and to attain a height 2,000 feet higher than that in migratory passages. The whale, a mammalian form, readily dives a mile below the surface of the sea; deep-sea fish occur to 17,000 feet; and other forms of marine life, largely microscopic, have been found as low as 23,000 feet. In contrast, life in the solid lithosphere ceases a short distance below the surface.

Recall that we delimited our consideration to those regions where man has insinuated his own personal presence. His knowledge vastly exceeds these narrow confines; for have not the telescope, spectroscope, and other instruments of the astronomer minutely inspected stars trillions of miles distant from our earth? In the earth itself deep oil wells are sunk to depths of 15,000 feet, permitting sampling of the rock at these levels and allowing studies of temperature phenomena. Ocean depths, once measured only with the limited sounding lead and line and hence thought to be bottomless in some locations, are now readily and accurately surveyed with the fathometer. This instrument utilizes an ultrasonic impulse, transmitted downward from a moving ship and received as an "echo" from the bottom of the sea. Since the interval between transmission and reception is a measure of the distance traveled by the impulse, a continuous automatic record of these intervals traces an exact contour of the bottom over which the surveying vessel passes.

Fathometer studies reveal that from any point of view ocean depths exceed land heights. The great Mindanao Deep off the Philippine Islands measures 35,400 feet below mean sea level; with this compare the 29,141-foot height of Mount Everest. Furthermore, the average of ocean depths, 12,500 feet, is more than five times greater than the average of land altitudes. The ocean floor bears what is really the greatest mountain in the world, the sister peaks of Mauna Kea and Mauna Loa on the island of Hawaii. Detached from any continent, the slopes of this mountain on reaching the sea continue downward and flatten out only on meeting the ocean floor, 18,000 feet below sea level. Adding this distance to their terrestrial height of 13,750 feet, we see that the Maunas, measured from the level floor of the Pacific, are 2,500 feet taller than is towering Everest measured from sea level. Hence Ocean is mightier than Land, in area and in contour extremes.

Where lies the future in penetration of heights and depths? Scientific progress is necessarily accelerated by promise of economic reward. Entry into the stratosphere has found practical application in airplane flight in this zone of equable meteorological conditions and minimal air resistance. Mountain-climbing techniques will continue to be developed by scientists and sportsmen, but if some objective such as a high-level deposit of desired ore should be discovered, we may look for perfection of means whereby human beings may not only reach, but may live and work at high altitudes. Mines and oil wells can be carried as deep as the desired veins exist, provided the resultant yield is sufficient to pay for the vastly increased cost of operations at lower levels. The floor of the ocean has been mapped, and if sound economic reason evolves for descent below the limits to date, diving technologists will discover the means.

Whether zenith or nadir will be attained first depends on where economically governed technology is led.

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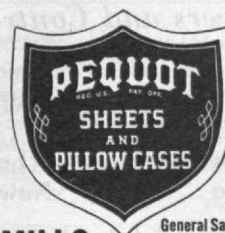
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THE CHANNEL TUNNEL

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whether the estimated expense of £60,000,000 would be well spent. Since the war budget at that time was £6,000,000 daily, there could be little doubt about that point. The sudden German campaign against the lowlands and France relieved the council from making a decision.

In the light of Marshal Foch's statement, however, one can only wonder what would have happened if the MacDonald government had agreed to the tunnel in 1924. It would have been in operation in 1930 or 1931. If so, England might have been able to relieve its forces in Belgium and might have been able to hold a European bridgehead all through the war. Dunkerque would not have happened. At the very worst, the tunnel would have been useless to both sides.

Operation Pluto proves what good there was in the old and always rejected idea, and the success of British operations in general may tend to make future British governments more self-confident and consequently more lenient toward the idea of the Channel tunnel.

Present Prospects

The tunnel may still be built, and there are many points in its favor. As an engineering project the tunnel is not only possible but actually easily accomplished. It is merely a question of magnitude, not a problem of difficulty. As a financial project the tunnel is likely to be a bonanza. Even the most conservative estimates admit that a Channel tunnel railroad could show a greater net profit than any other railroad in the world. From the

military point of view the tunnel is apt to be an asset; at worst it cannot be a liability.

If such a tunnel were built, how would it look? It would be constructed for electric trains only in order to facilitate ventilation. Automobiles could be put on special railroad cars, coupled to the train, to be transported through the tunnel in about the same manner as a ferryboat carries automobiles across a river. The tunnel would probably consist of two parallel tunnels of circular cross section, with a recessed gallery for traffic control, watchmen, and repairmen, with interconnections between the two tunnels every 500 yards. Naturally all the safety devices invented for and in use in subways could be employed.

The train trip through the tunnel would take about 30 minutes, whereas in the very best of sailing weather (which is rare indeed over there) the boat trip across the Channel takes about three times as long. The main saving, however, would not be that brought about by the higher speed of the train. What happens at present is this: The train from London to the coast takes about an hour, you then climb out of the train, wind your way around piles of coal and other obstacles and find the Channel boat, which sails after some 30 minutes' delay, provided the weather is not too bad. If the weather is bad, you wait for it to improve. At the other side you walk off the boat — some people are too seasick to do that well — and board another train which departs after half an hour's delay. The tunnel train would go through with little if any delay at either end, saving more than an hour of embarkation and debarkation time. The tunnel train could have sleepers for those making long journeys.

Possible postwar aviation may spoil this argument as far as passenger traffic is concerned; but very heavy freight, or bulk freight, is not going to fly.

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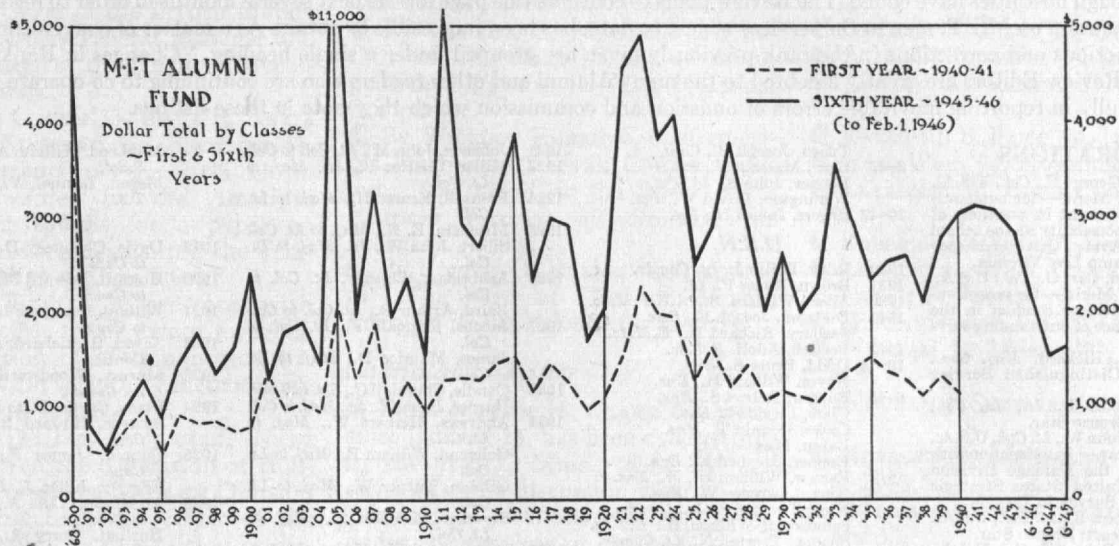
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TECHNOLOGY MEN IN ACTION

THE ALUMNI FUND — ITS PROBLEMS AND GROWTH



Progress

HEREWITH a chart of progress, a record of giving to the Alumni Fund. The year 1945-1946, the Fund's sixth, does not come to an end until the last of March, but it has reached a point where certain comparisons are legitimate. Giving by classes is one such comparison.

The curves show a number of interesting things. Note, for example, how many of the peaks and valleys of the first-year curve are repeated in the sixth year, although in different degree. Of especial interest is the record of the younger men, those who have become Alumni since the Fund began. It might logically be expected that these new additions to the Association's ranks, many of them pulled out of classes to enter the service as enlisted men, would be unable to contribute so generously as their predecessors. Yet the seven classes in this category contributed almost the same amount as the seven classes immediately preceding them — 1933 to 1939. And their numbers were essentially the same. Furthermore, while 1923 to 1929 have almost the same total of men, the youngsters gave only 20 per cent less than they did.

To the Fund, these two curves represent the difference between \$65,000 and \$151,000. To the Institute, it is the difference between \$21,000 and something over \$100,000, for the expenses of Association and Fund operation and subscriptions to *The Review* remain essentially the same. On Alumni Day, Dr. Compton listed some of the Institute's major needs. Our accumulated gift, now well over a third of a million dollars, should play an important part in helping to satisfy those needs.

TECHNOLOGY MEN IN ACTION

M.I.T. MEN AT WAR

Up to February 16 over 9,287 Institute Alumni, including 37 Admirals, 7 Commodores, and 95 Generals, were reported as being in the active naval or military services of the United Nations. There were 275 Alumni who had been decorated, and 169 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

DECORATIONS

- 1906 Hobson, George F., *Col.*, U.S.A., Legion of Merit — for outstanding achievement in positions of great responsibility at the school of the Army Quartermaster Corps, Camp Lee, Virginia.
- 1911 Richmond, Carl G., *Col.*, U.S.A., Legion of Merit — for exceptionally meritorious conduct in the performance of outstanding service.
- 1921 Donovan, Richard, *Maj. Gen.*, U.S.A., Distinguished Service Medal.
- Winn, John J., Jr., *Lt. Col.*, U.S.A., Bronze Star.
- 1923 Beretta, John W., *Lt. Col.*, U.S.A., Bronze Star — in connection with work for the Damage Division of the United States Strategic Bombing Survey in London.
- 1924 Gegan, John B., *Lt. Col.*, U.S.A., Purple Heart; Bronze Star.
- 1926 Mattson, Robert E., *Col.*, U.S.A., Order of Homayoun, 3d Class — Iranian decoration.
- 1928 Johnson, Ellis A., *Comdr.*, U.S.N., Distinguished Service Medal — for work with the Naval Ordnance and for introducing many scientific ideas into underwater naval warfare.
- 1932 Harper, James E., Jr., *Col.*, U.S.A., Legion of Merit — for outstanding services in the Middle East.
- 1934 Stevens, Malcolm S., *Lt. Col.*, U.S.A., Bronze Star — for meritorious service in the European Theater of Operations.
- 1937 Salny, Jerome E., *Lt. Col.*, U.S.A., Bronze Star — for exceptionally meritorious conduct in the performance of outstanding service while Air Chemical Officer of the Army Air Forces.
- 1939 Wexler, Harry, *Maj.*, U.S.A., Air Medal — for acting as technical observer on a flight through the Atlantic hurricane on September 14, 1944.
- 1941 Katz, Leonhard, *2nd Lt.*, U.S.A., Distinguished Service Medal; Air Medal.
- 1942 Greeses, Bernard A., *Maj.*, U.S.A., Bronze Star — in connection with the effectiveness of fire bombs in the India-Burma Theater of Operations.
- 2-44 Burdick, Robert S., *Comdr.*, U.S.N., Bronze Star — for meritorious service as a member of the Admiral's Staff in planning landings in Korea and North China.
- 2-47 Tuzen, Joseph B., *Capt.*
Blair, Malcolm J., *Pvt.*
Bonner, John S., 3d, *Pvt.*
Wellington, David W., *Pvt.*
Rogers, James H., *Pvt.*

U.S.N.

- 1930 Riley, Philip J., *Lt. Comdr.*
1931 Brown, Roger P., *Lt.*
1936 Allen, William B., *A.E.T.M.Sc.*
1941 Dietgen, Joseph E., *S.1.c.*
*Seabury, Richard H., *E.M.1.c.*
1942 Bertsch, Adolf, *E.T.Sc.*
10-44 Dodd, Bruce S., *Ens.*
Noyes, William H., *Ens.*
6-45 Buxton, Robert S., *Ens.*
Clare, David E., *Ens.*
Clove, Donald T., *Ens.*
Eaton, Max A., *Lt.*
Eppner, Stephen E., *Ens.*
Farrow, William H., Jr., *Ens.*
King, Lawrence W., *Ens.*
King, Thomas S., Jr., *Comdr.*
Schwartau, William H., *R.T.Sc.*
Shamer, Preston N., *Lt. Comdr.*
Sheff, Ronald C., *Ens.*
Traver, Darwin G., *Ens.*
Turner, George K., *Ens.*
2-46 Anderson, Carl E., *S.2.c.*
Carnody, Daniel B., *S.1.c.*
Gates, David E., *Mid.*
Gordon, Hason M., Jr., *S.1.c.*
Huston, Harland W., Jr., *Ens.*
Jackson, William, Jr., *Lt. (j.g.)*
Krueger, Richard T., *S.1.c.*
Landgraf, Stanley K., *Y.3.c.*
Lim, George, *Ens.*
Little, William E., *S.2.c.*
Ward, Alexander B., 2nd, *Ens.*
6-46 Wong, Calvin, *S.1.c.*
Harrington, Leroy J., Jr., *S.1.c.*
McCarthy, Frank V., *S.1.c.*
Scanlan, Thomas R., Jr., *R.T.Sc.*
Zawadzki, Thomas, *S.2.c.*
10-46 Catland, Alfred C., Jr., *S.1.c.*
Gordon, Graham, *S.2.c.*
Olson, Arvid O. E., *H.A.1.c.*
Spademan, Loren C., Jr., *S.1.c.*
2-47 Behr, John M., *S.1.c.*
Chapman, Dewey E., Jr., *S.1.c.*
Janlon, John J., *S.1.c.*
Lamm, Robert J., *So.M.2.c.*
Marr, Austin F., *S.1.c.*
Merriman, Donald R., *S.1.c.*
Pinness, George, Jr., *E.T.M.Sc.*
Proctor, Harold E., Jr., *S.1.c.*
Reichert, William G., Jr., *S.1.c.*
Sabbagh, Samuel J., *S.1.c.*

U.S.C.G.

- 10-46 Peterson, Karl F., *Cadet.*

U.S.M.C.

- 2-47 Bentley, Wray D., Jr., *Pvt.*

CHINA

Army

- 10-44 Hsiao, Jen Tsun, *Capt.*

PHILIPPINES

Army

- 1941 Planes, Maximo I., *Maj.*

CHANGES IN RANK

U.S.A.

- 1910 Fabens, Andrew L., *Lt. Col. to Col.*
1911 Kenney, George C., *Lt. Gen. to Gen.*
1914 Waitt, Alden H., *Brig. Gen. to Maj. Gen.*
1918 Earl, John H., *Sgt. to Maj.*
1919 Strang, James M., *Lt. Col. to Col.*
1920 Moffat, Fraser M., Jr., *Lt. Col. to Col.*

- 1921 Johnson, John M., *Lt. Col. to Col.*
1922 Miller, Charles B., Jr., *Maj. to Lt. Col.*
1924 Frenzell, Ernest H., *Maj. to Lt. Col.*
1925 Mitcham, E. H., *Maj. to Lt. Col.*
Sibert, John W., Jr., *Maj. to Lt. Col.*
1926 Ashbridge, Whitney, *Lt. Col. to Col.*
Baird, Arthur R., *Lt. Col. to Col.*
1927 Jacobs, Reginald F., *Lt. Col. to Col.*
James, Maurice D., *Maj. to Lt. Col.*
1932 Condie, Churchill C., *Sgt. to S.Sgt.*
Harper, James E., Jr., *Maj. to Col.*
1934 Andrews, Herbert W., *Maj. to Lt. Col.*
Coleman, William E., *Maj. to Lt. Col.*
Gilman, Turner W., *Maj. to Lt. Col.*
Stevens, Malcolm S., *Maj. to Lt. Col.*
1935 Daley, Paul W., *Maj. to Lt. Col.*
1936 Meeks, John A., *Maj. to Lt. Col.*
Schoettler, Frank W., *Pvt. to 2nd Lt.*
Snow, Edson B., *Maj. to Lt. Col.*
1937 Birch, Norman A., *Lt. to Capt.*
Nickerson, Robert, *Lt. to Capt.*
1938 Bethel, John S., Jr., *Capt. to Maj.*
Jackson, James M., 2nd *Lt. to Capt.*
Mehren, Bernard W., 2nd *Lt. to 1st Lt.*
Tolman, Merrill E., 2nd *Lt. to 1st Lt.*
1939 Reed, Harlow J., 2nd *Lt. to 1st Lt.*
1940 Castle, Alfred E., *Capt. to Maj.*
Forney, Gerard J., *Lt. Col. to Col.*
Parent, Robert A., *Maj. to Lt. Col.*
Williamson, William G., Jr., *Lt. to Maj.*
1941 Britt, Charles B., *Capt. to Maj.*
Farr, Leo E., Jr., *Lt. to Capt.*
Hensel, Rudolf W., *Lt. to Capt.*
March, Eugene A., *Capt. to Maj.*
Rose, Grover D., Jr., *Capt. to Maj.*
Samuels, Howard J., *Maj. to Lt. Col.*
Tirrell, Stanley A., *Capt. to Maj.*
Van Dongen, Dirk, *Capt. to Maj.*
1942 Crowley, Thomas T., *Maj. to Lt. Col.*
Power, Arthur J., *Lt. to Capt.*
Stansfield, Donald H., *Corp. to S.Sgt.*
1943 Kapstein, Seymour C., 2nd *Lt. to 1st Lt.*
Smith, Frank S., Jr., 2nd *Lt. to 1st Lt.*
2-44 Buchanan, James P., 2nd *Lt. to 1st Lt.*
Cochran, Edward W., 2nd *Lt. to 1st Lt.*
Jealous, David, *Pvt. to 1st Lt.*
Kahl, DeLoss, Jr., 2nd *Lt. to 1st Lt.*
Littlefield, Charles C., Jr., *Pvt. to T.5.*
Schulman, Norman S., *Corp. to S.Sgt.*
Teixeira, Newton A., 2nd *Lt. to 1st Lt.*
10-44 Coan, Edward M., *Sgt. to T.3.*
Davison, Alan T., *Pvt. to Pfc.*
Ham, Clifford C., Jr., *Pvt. to Lt.*
Jay, Theodore C., Jr., *Pfc. to T.4.*
Loufek, Charles W., Jr., *Pfc. to T.5.*
Mullen, Jay, *T.4. to T.3.*
Parr, Donley J., Jr., *Pfc. to Sgt.*
Sewall, William D., *A.S. to T.5.*
Stahlman, William D., *Pfc. to Sgt.*
6-45 Brown, Curtis H., *Pvt. to Pfc.*
Kurz, Charles R., *Pvt. to T.6.*

- MacLeod, William A., Jr., *Pfc. to S.Sgt.*
Mason, Lemuel W., Jr., *Pvt. to T.5.*

U.S.N.

- 1912 Davis, Chauncey D., *Lt. Comdr. to Capt.*
1920 Howard, Edward M., *Lt. Comdr. to Comdr.*
1921 Willard, Lawrence L., *Lt. Comdr. to Comdr.*
1922 Aaron, H. Richard, *Lt. Comdr. to Comdr.*
1923 Murray, Woodworth N., *Lt. to Lt. Comdr.*
1924 Plant, Curtis, *Lt. to Lt. Comdr.*
Stevens, Howard B., *Comdr. to Capt.*
1925 Cuniff, James F., *Comdr. to Capt.*
Edgerly, Julien J., *Lt. to Comdr.*
1928 Armstrong, Cole A., *Lt. Comdr. to Comdr.*
Hurlbut, Terry A., *Lt. to Lt. Comdr.*
Kirk, William J., *Lt. Comdr. to Comdr.*
1929 Couper, B. King, *Lt. Comdr. to Comdr.*
1933 Ellis, Burton T., *Lt. to Lt. Comdr.*
1935 Birchall, Louis F., *Ens. to Lt.*
1936 Lippitt, Henry F., 2nd, *Lt. (j.g.) to Lt. Comdr.*
1938 Gere, Brewster H., *Lt. to Lt. Comdr.*
Sullivan, Paul J., *Lt. to Lt. Comdr.*
1939 Cooke, Frederick A. F., *Lt. to Lt. Comdr.*
1940 Edwards, Theodore A., *S.1.c. to A.R.T.Sc.*
Halstead, George C., *Lt. (j.g.) to Lt. Comdr.*
Hess, Robert S., *Lt. (j.g.) to Lt. Comdr.*
1941 Anderson, William G., *Lt. to Lt. Comdr.*
Moody, Muller P., *Lt. to Lt. Comdr.*
Stern, John A., *Lt. to Lt. Comdr.*
Thompson, Robert S., *Lt. to Lt. Comdr.*
1942 Collins, John L., *S.1.c. to R.T.2.c.*
Gleason, Fletcher, *Ens. to Lt. (j.g.)*
Kotsch, William J., *Lt. (j.g.) to Lt.*
Sharpe, Leon M., *Ens. to Lt.*
1943 Adler, Richard B., *Ens. to Lt. (j.g.)*
Briber, Frank E., Jr., *Ens. to Lt. (j.g.)*
Davis, Wendell, *Lt. (j.g.) to Lt.*
1943 Frederickson, Arman F., *Ens. to Lt.*
Gershenow, Harold J., *Lt. (j.g.) to Lt.*
2-44 Sadler, William C., *Ens. to Lt. (j.g.)*

CASUALTIES

- 1937 ★Walsh, Edward C., *1st Lt.*, U.S.A.
1938 ★Gallagher, Robert A., *Lt.*, U.S.N. — on a Japanese ship en route to Japan after being a prisoner for three and one-half years.
1939 ★Scheidt, Frederick E., *Corp.*, U.S.A.
1941 ★Reeves, Milton C., *Lt.*, U.S.A. — presumed dead after being reported missing in action in the Italian Theater of War since November, 1943.
*Seabury, Richard H., *E.M.1.c.*, U.S.N. — Pacific area.
1943 ★Spear, Ernest M., *Lt.*, U.S.A.
6-45 ★Jackman, Waldo C., Jr., *Corp.*, U.S.A. — ship collision on the Atlantic.

★ Killed in Action

† Missing in Action

‡ Prisoner of War

* Died or Killed in Service

** Wounded

ALUMNI AND OFFICERS IN THE NEWS

Commendable

¶ HAROLD R. L. FOX '12, honored at New Year's as Commander of the Most Excellent Order of the British Empire for his work as general manager and chief engineer of the Jamaica Government Railway.

¶ MORRIS COHEN '33, DARA P. ANTIA '43, and STEWART G. FLETCHER '43, joint recipients of the 1945 Howe Medal, awarded by the American Society for Metals for a paper on "Structural Changes During the Tempering of High-Carbon Steel."

¶ HARRY WEXLER '39, presented with the Robert M. Losey award for 1945, in recognition of outstanding contributions to the science of meteorology as applied to aeronautics.

¶ RALPH D. BENNETT, staff, Navy captain, given the decoration of Honorary Officer of the Military Division of the Most Excellent Order of the British Empire, in recognition of distinguished services in co-operation with British officers during the war.

Enterprise

¶ In NORMAN L. BOWEN '12, elected president of the Geological Society of America.

¶ In ALBERT HAERTLEIN '18, elected a director of the American Society of Civil Engineers, accredited to District Number Two.

¶ In AUGUSTUS B. KINZEL '21, made a director at large of the American Welding Society for a term of three years.

¶ In ROBERT WISE '27, chosen president of the New England Association of Ice Cream Manufacturers for a two-year term.

¶ In HOWARD A. ROBINSON '30, made chairman of the executive committee of the division of high-polymer physics of the American Physical Society.

¶ In NORMAN J. GORDON '43, Lieutenant (Junior Grade), U.S.N.R., selected by Generalissimo Chiang Kai-shek to serve as adviser to the Chinese Ministry of the Interior in its program to rebuild devastated areas in China.

Wit and Wisdom

¶ By CHARLES W. KELLOGG '02, author of "Your Electricity and Your Money," in the *Atlantic* for January.

¶ By JOHN MILLS '09, author of *The Engineer in Society*, published by the D. Van Nostrand Company.

¶ By JOHN H. SCARFF '10, author of "London, Armistice Day, 1945," in the *Journal of the American Institute of Architects* for January.

¶ By RICHARD A. WILKINS '18, co-author with Edward S. Bunn, of *Copper and Copper Base Alloys*, published by the McGraw-Hill Book Company.

¶ By GEORGE C. MANNING '20, author of *The Basic Design of Ships*, published by the D. Van Nostrand Company.

¶ By WILLIAM EMERSON, staff emeritus, author of "Frank Conger Baldwin, 1869-1945," in the *Journal of the American Institute of Architects* for February.

¶ By ROBLEY D. EVANS, staff, author of "The Medical Uses of Atomic Energy" in the *Atlantic* for January.

Charm and Chatter

¶ From MYRON H. CLARK '03, who, since January 25, has been conducting, in the Athol, Mass., Y.M.C.A., a series of eight discussion meetings on "Principles of Management," given under the auspices of Philip L. Gamble, professor of economics at Amherst.

¶ From PERCY BUGBEE '20, who spoke on "How to Prevent Fires" on January 14 before the Plymouth County Rotary Club.

¶ From FRANK S. BADGER, JR., '27, who addressed the January 9th meeting of the Worcester chapter of the American Society for Metals on "Precision Castings."

¶ From ALWIN B. NEWTON '32, who discussed "High Speed Refrigeration Compressors" at a meeting of the Boston section of the American Society of Refrigerating Engineers on January 10.

¶ From HERMAN G. PROTZE, JR., '32, who presented an "Investigation of Causes of Defective Concrete — Their Prevention, Correction and Evaluation" at the January 9th meeting of the designers' section of the Boston Society of Civil Engineers.

¶ From IRWIN W. SIZER, staff, who spoke on "Active Groups of Enzymes" on January 12 at Brown University.

DEATHS

* Mentioned in class notes.

¶ HARVEY M. MANSFIELD '83, December 20.*

¶ ROSCOE L. CHASE '84, January 17.

¶ WILLIAM L. DEARBORN '88, October 20.

¶ GEORGE W. ROPER '88, January 6.*

¶ ALEXANDER S. EWEN '89, May 6.

¶ FRANK C. BALDWIN '90, November 25.*

¶ ERNEST H. BROWNELL '90, December 19.*

¶ CHARLES F. FITTS '90, October 17.*

¶ ARIEL B. EDWARDS '93, January 8.

¶ ALBERT L. KENDALL '93, January 23.*

¶ RAYMOND B. PRICE '94, January 31.*

¶ ISAAC WEIL '94, November 30.*

¶ CLARENCE W. PERLEY '96, February 3.

¶ ROBERT G. HALL '97, November 24.

¶ LEON ALLAND '98, December 19.*

¶ FRANK F. FOWLE '99, January 22.

¶ G. MANNING GALE '99, October 11.*

¶ WILLIAM L. MORRIS '99, December 8.*

¶ WILLIAM J. SAYWARD '01, December 21.

¶ HERBERT D. MCKIBBEN '06, March 5, 1945.*

¶ WILLIAM L. WOODWARD '07, January 31.

¶ KESTER BARR '11, November 25.

¶ CALEB S. BRAGG '11, October 24, 1943.*

¶ WILLIAM H. JOUETT '12, January 18.

¶ HAROLD WARREN '14, January 3.*

¶ ERNEST T. HICKMAN '18, January 14, 1945.*

¶ DONALD B. PARKINSON '18, November 17.*

¶ MYLES F. CONNORS '19, December 31.*

¶ JOHN D. MITSCH '20, January 18.*

¶ THEODORE K. KEITH '24, January 15.

¶ HERBERT R. PIERCE '25, October 30.*

¶ HERBERT J. KAUFMANN '26, December 18.*

¶ MORRIS SHULMAN '27, December 16.

¶ JOSEPH A. PARKS, JR., '28, December 15.*

¶ EVERETT S. COFRAN '30, January 7.

¶ RANDOLPH P. WILLIAMS '30, September 5, 1944.

¶ EDMUND G. CAINE '31, date unknown.

¶ KHAGENDRA C. ROY '32, October 19.

¶ MODI M. BAGAI '34, date unknown.

¶ MORTON H. KANNER '36, June 10, 1943.*

¶ WILLIAM F. RAMSAY '36, December 2.

¶ EDWARD C. WALSH '37, December 16, 1943.*

¶ DEAN E. SWIFT '40, January 7.

¶ HUGH M. BRANHAM '41, November 7.*

¶ MILTON C. REEVES '41, November 23, 1943.*

¶ HARRY G. WHITMAN, JR., '41, December 15.*

¶ DOUGLAS G. FENTON '43, March 20, 1945.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Institute of Radio Engineers

The winter technical meeting of the I.R.E., held at the Astor Hotel for five days from Tuesday, January 22, through Saturday, January 26, attracted an attendance of 7,100 and such an abundance of material that it was necessary to schedule as many as three simultaneous technical sessions. The social functions included a banquet on Thursday evening, the President's luncheon and a cocktail party on Friday. The banquet address, given by Frank B. Jewett '03, was entitled "Industrial Research — Past and Prospective Future." On Wednesday evening, at a combined meeting of the American Institute of Electrical Engineers and I.R.E. in the auditorium of the Engineering Societies Building, Leslie R. Groves '17, Major General, U.S.A., spoke on the atomic bomb, showing motion pictures of the July 16 explosion at Alamogordo, N.M., and of the results of the explosions at Hiroshima and Nagasaki.

Awards of fellowship in the I.R.E., a grade of membership granted in recognition of professional service of merit, were bestowed on the following Alumni in the ballroom of the Astor during the banquet on Thursday: Harold S. Osborne '08, "for his contributions in the electrical communication field including outstanding leadership and direction in the application of new techniques to telephony"; Julius A. Stratton '23, "in recognition of his contributions as a teacher and author adept in the field of fundamental research, who has applied his knowledge to improve radio communications"; Arthur L. Samuel '25, "for his fundamental work in the field of electronic research and for development of electronic devices of particular value at very high frequencies"; and Howard A. Chinn '27, "for his contributions to improved broadcasting."

The following Alumni were among those who delivered papers: Roger A. Sykes '29, "High-Frequency Plated Quartz-Crystal Units for Control of Communications Equipment"; John N. Dyer '31, joint author, "Generation of Continuous-Wave Power at Very High Frequencies"; V. Lawrence Parsegian '33, "A New High-Speed Recording Potentiometer"; David B. Smith '33, "Theory of Impulse Noise in Ideal Frequency-Modulation Receivers"; Ernest A. Massa '34, joint author, "Application of Radar Techniques to Aircraft Fire-Control Systems"; John M. Fluke '36, joint author, "Some Technical Developments in Light-Wave Communications"; John E. Freehafer '37, "The Role of Atmospheric Ducts in the Propagation of Short Radio Waves"; Arthur H. Ross '40, "Analysis of the Simple Crystal Filter"; John W. McNall '42, joint author, "Secondary-Emission Cathodes for Magnetrons"; Francis J. Gaffney '43, "A Spectrum Analyzer for Microwave Pulsed Oscillators"; Elliott

C. Levinthal '43, "Cascade Amplifier Klystrons"; Gordon M. Lee '44, "A Three-Beam Oscillograph for Recording at Frequencies up to 10,000 Megacycles"; and Ralph D. Bennett, staff, Captain, U.S.N.R., "Basic Principles of Underwater Sound-Equipment Design" and "Electronics in Naval Warfare."

Our Siamese Contingent

From the Royal Thai Legation in Washington comes war news which can now be released concerning some of our recent Siamese students. Ten of these young men received military training under the United States Army in this country and were then commissioned in the Free Thai Military Unit, which was organized by the legation for action overseas. Boonrod Binson '38, S.M. in Electrical Engineering, served with the Free Thai Unit in China, where he was in charge of group transportation, and in India. He later penetrated into Siam while it was still under Japanese occupation. Chua Hoonchamlong '39, S.B. in Mechanical Engineering, and Chamroon Tishyanandana '39, served overseas and were smuggled into Japanese-held Siam for underground action. Both Siddhi Savetsila '43, S.B. in Metallurgy, and Udom Sakdi Bhasavanich '43, became qualified paratroopers under American training and were dropped from Allied planes into Siam, as was also Wimon Wiriyawit '43. Karawek Srivicharna '41, S.B. in Civil Engineering, was caught by the Japanese and killed on the spot, after having penetrated through enemy lines in Indo-China. His mission, under the American Office of Strategic Services, was to obtain enemy information for the Allies. Bunmag Desaputra '43 was landed in Siam during the war from an Allied submarine and became the head of the secret agents under the Siamese Regent, in the underground movement against the Japanese. Two other former Technology students, Nithipatana Jalichandra '42 and Bunyen Sasiratna '43, who were at the Institute in 1939-1940, were in the Free Thai group overseas. Sasiratna was one of a group of four who made their way for more than 200 miles on foot, from Szemao in southern China, down across the almost uncharted mountain areas of northern Burma and Indo-China, into Siam, disguised as peddlers. They were among the first to establish radio contact between the Siamese underground movement and the Allies, which resulted in the transmission of much valuable information. Sasiratna, under his code name of "Bunny," figures in the O.S.S. article in the December *Cosmopolitan*. All these Alumni now hold the temporary rank of captain in the Royal Siamese Army.

M.I.T. Association of Buffalo

The Club met at the University Club on November 8 for their annual election of officers. Fredric Flader of Fredric Flader, Inc., former chief engineer of the airplane

division of the Curtiss-Wright Corporation, addressed the group on the subject of gas turbines. Both the talk and the ensuing discussion were lively and enlightening.

Elected president for the year was George R. Duryea '17. George couldn't attend the meeting, being in Detroit with a Duryea automobile of ancient vintage for the automobile show. Two vice-presidents were elected: Lester F. Hoyt '13 and Matthew N. Hayes '36. Your scribe was re-elected secretary and treasurer.

The following Alumni attended the meeting: Herbert C. Button '23, William O. Christy '31, Frank H. Copeland '18, Edward L. Dashefsky '36, Bernard R. Fuller '09, Marvine Gorham '93, Anton E. Hittl '36, Milton Lief '37, Thomas J. McNaughtan '32, Saul Nanyet '40, Glen J. Nihart '43, Carl F. Norbeck '29, F. Lewis Orrell, Jr., '39, Mendel N. Pack '31, Leslie W. Powers '23, George D. Ray '36, James L. Ricketts '18, Joseph R. Ryan '31, Walter H. Sherry '37, Harold L. Smith '18, Randall C. Smith '35, Thomas H. Speller '29, Nelson Stone '15, M. Loren Wood '40, Robert N. Youngblood '34. — WALTER H. SHERRY '37, Secretary, Ferguson Electric Construction Company, 333 Ellicott Street Buffalo 3, N.Y.

M.I.T. Association of Cleveland

Renewing a pre-war custom, the Club played host during the Christmas holidays to about 15 Greater Cleveland undergraduates. The time was December 29, and the place a luncheon at Cleveland's Mid-Day Club. Chuck Reed '20, as master of ceremonies for the occasion, called upon several of the undergraduates to bring the Alumni up to date on the rapidly changing scenes at Technology. Their comments were directed both toward the more physical aspects of the Institute and toward the wartime status of activities and athletics. Among the Alumni present were several men recently returned from overseas who shared with the group one or two of their experiences. John Ewing '42 gave a brief glimpse of the radar officer's life aboard a carrier, and Norm Klivans '40 recounted some trying moments on the air strip at Iwo Jima. Finally, the pleasure of the occasion was enhanced by the presence of some of the "younger" Alumni, including F. W. Crosby '90, Horace R. Thayer '98, and W. A. Cleaveland '98.

The luncheon meeting at the Mid-Day Club was followed on January 10 by a regular alumni dinner meeting. A very large turnout was rewarded by a very fine dinner and one of the most congenial gatherings in this writer's experience. R. H. Smith '23 gave an interesting account of his recent experiences in Europe as a member of the Technical Industrial Intelligence Committee. Although Dr. Smith's specific mission had been to gather information on the enemies' advances in the field of industrial electric motors and generators, his talk dwelt for the most part on the

broader picture of the enemy countries and in particular on the present state of Germany and her people. Listening to the speaker, one gathered the idea that Germany's collapse was due largely to the failure of her transportation system rather than to the destruction of her industries. Dr. Smith's talk was profusely illustrated with colored slides, which, in spite of his many apologies, were of professional quality.

Besides Chuck Reed, other familiar faces at the meeting included the following: F. W. Crosby '90, Allen A. Gould '10, Willard G. Loesch '21, Bill Elmer '22, George Schumacker '22, Bill Robinson, Jr., '24, Frank Schreiner '26, Bill Sessions '26, Howard Ferguson '27, Dick Young '37, Fred Reuter '38, and Chuck Smith '42. — CHARLES H. SMITH, JR., '42, *Secretary*, Steel Improvement and Forge Company, 970 East 64th Street, Cleveland 14, Ohio.

Detroit Technology Association

For our second meeting of this 1945-1946 season, Vice-president Martin '25 brought to the guest speaker's chair Don Miller, of Motor Products Corporation's manufacturing executive staff. Mr. Miller's subject, "Production Control," dealt with the flow of materials from the receiving room to machine shops through assembly stages and inspection to the shipping room. It was an interesting account of one man's experience both before and during the war period: starting in new plants, straightening out production kinks of established concerns, and meeting the more urgent wartime schedules of products ranging from civilian goods to machine guns and the more secret materials which Mr. Miller did not choose to discuss. His exposition of incentive group system programs, successfully used in plants Mr. Miller was associated with, suggests a possible avenue of approach to present-day production problems. An open forum at Mr. Miller's invitation brought forth many stimulating inquiries.

One of the members present, A. B. Morrill '09, had recently returned from China. At the request of those who had heard his interesting talk about the Far East on February 22, 1944, Colonel Morrill consented to give a firsthand report of India and China before and after V-J Day. In his pleasant, soft-spoken manner the Colonel told of water supply in the Far East, of China's money problem, of inflation and its effects on the cost of living, of China's family life and customs, and of the greater independence of her women and their part in China's struggle. He held his audience in rapt attention as he spoke with an impromptu fluency born of experiences dating back to his first visit 30 years ago. We were pleased indeed by his unexpected attendance.

Alumni and guests present were as follows: A. B. Morrill '09, R. S. Gans '13, F. N. Phelps '13, R. C. Doremus '14, P. C. Baker '16, E. J. Barney '16, T. K. Hine '16, C. T. Ellis '17, A. C. Litchfield '17, M. W. Pettibone '17, F. B. Smith, Jr., '18, G. C. McCarten '19, W. W. Kosicki '20, P. L. Hanson '21, D. B. Martin '25, Samuel Samuelson '25, J. E. Longyear '26, D. M. Sutter '26, C. B. Allen, Jr., '29, Stanley Brown '33, Chesley Ayers '34, T. F. Morrow '35, E. W. Lovering '38, W. L. Knauer

'43, B. Sweeney (a prospective M.I.T. student), G. F. Ewald (Wayne University '32), D. E. Miller, guest speaker (Michigan State College '30). — THOMAS F. MORROW '35, *Secretary*, 16894 Birwood, Detroit 21, Mich.

Indiana Association of the M.I.T.

For our first dinner meeting of the new year we heard a talk by R. B. Annis on a new dynamic balancing machine developed by the R. B. Annis Company of Indianapolis and given extensive use during the war. The talk included a discussion of the fundamentals of unbalance and was illustrated by blackboard sketches and slides. Mr. Annis described several other balancing machines and went into quite complete detail on the principles behind his own machine.

A typical Hoosier election was held to choose a new secretary-treasurer for the Association. John H. Babbitt '17 won hands-down by unanimous vote. The retiring secretary, Marshall D. McCuen '40, is leaving the city for his old home town of Lansing, Mich., and wishes Mr. Babbitt the best of luck with his new job — may he soon graduate to Mr. Harvey's plush job of president.

The following Alumni were present: J. L. Wayne, 3d, '96, H. S. Morse '03, G. P. Allen '16, J. H. Babbitt '17, E. G. Peabody '21, A. C. Rood '21, Harry Karcher '25, G. E. Mason '25, S. C. Boyle '27, T. G. Harvey '28, Russell Fanning '30, G. W. Klumpp '30, S. H. Hopper '33, R. G. du Bois '34, C. L. Bouchard '36, and M. D. McCuen '40. — JOHN H. BABBITT '17, *Secretary*, 3734 Carrollton Avenue, Indianapolis 5, Ind.

Technology Club of Manila

On Sunday, January 6, for its first distinctly social affair since reorganization, the Club held a combination boat trip and house party. Approximately 50 Tech men and their guests were present. Through the combined efforts of Bernardo P. Abrera '32 and Marvin H. Dixon '30, President, a motor launch was secured and the party embarked from Malacanan for a two-hour cruise up the Pasig River, terminating at the impressive home of Mr. and Mrs. Francisco D. Santana. Mr. Santana is a graduate of the Class of 1932.

For many of the group, the opportunity to view the industries along the riverbanks was a new and interesting experience. It was noted that substantial progress has already been made in rebuilding the area's industrial installations, many of which were heavily damaged during last year's bitter fighting. The presence, as guests of the Club, of a number of young ladies, the daughters and friends of Manuel Manosa '21, early established a party atmosphere, and the customary cold beer was available in quantity. At Pasig, Mr. and Mrs. Santana graciously acted as host and hostess for the party and provided an excellent buffet dinner, facilities for dancing, and additional refreshments. At the Santanas' home was a group of young ladies from Pasig. The return trip was highlighted by a vociferous, if somewhat unharmonious, song session.

Technology men present at the affair included the following: Bernardo P. Abrera

'32, William H. Bertolet '45, Randall S. Caswell '44, Cesar H. Concio '40, Ciriaco Coronel '31, Arthur K. Deming '35, Marvin H. Dixon '30, Jose C. Espinosa '22, Robert S. Faurot '44, James M. Gassaway '45, James D. Ingham '43, Antonio C. Kayanan '42, Fred A. Ladd, Jr., '33, Kenneth A. Lambert, Jr., '45, Walter W. Lappin '31, Russell E. Lawton '45, John V. Minges '42, George Oetinger, Jr., '25, Donley J. Parr '45, Stanley M. Porosky '43, George H. Rabson '33, Tomas de los Reyes '39, Albert C. Saer '43, Francisco D. Santana '32, Kenneth G. Scheid '45, Ramon S. Sevilla '39, William D. Sewall '45, Rafael T. Simpao '40, and Gregorio Y. Zara '26. — STANLEY M. POROSKY '43, *Secretary*, Headquarters, Army Forces Western Pacific, Office of the Chief Signal Officer, Signal Supply Division, A.P.O. 707, care of Postmaster, San Francisco, Calif.

M.I.T. Club of South Florida

Off-stage music by a string trio, variegated refreshments, and plenty of palaver characterized our first postwar meeting on January 10 at the Miami Beach residence of President Mandell '21. Among those present were F. S. Anderson '04, Thomas P. Coogan '24, Henry G. Dooley '20, Harry Gamble '26, George Green '95, Stanley Hooker '97, James Kimball '85, Alexis Kononoff '29, Prexy Mandell '21, John J. Ostlund '35, Carl Orleman '31, Richard O'Donovan '27, G. Edward Sakrison '29, Clarence P. Thayer '23, Secretary, George F. Wollinger, Jr., '37, and Fred Zurwelle '20. Messrs. Anderson, Dooley, Green, and Hooker represented the Fort Lauderdale auxiliary, and Wollinger came all the way from St. Petersburg. Much of the discussion between youngsters and oldsters present turned on plans for highly interesting future meetings involving the latest military establishments and outstanding business developments in Florida. We also plan a closer liaison with Technology graduates from the North who visit the Palm Beach-Miami area during the season.

Meanwhile all members of the Club have appointed themselves an investigating committee to meet next month at the home of Fred Zurwelle at Miami Beach and receive evidence as to whether Fred is in fact the best outdoor barbecue expert that ever came out of the famous Class of 1920. In the month after that (members tactfully remembering to give the wives a break), all members and their ladies have been invited to visit the famous water-front estate of Captain Anderson at Fort Lauderdale, with Dooley, Green & Hooker, Inc., assisting in the arrangements. A postal card sent to the Secretary will provide visiting graduates with all the details. — CLARENCE P. THAYER '23, *Secretary*, 4212 Northwest Sixth Avenue, Miami, Fla.

New Haven County Technology Club

The second meeting of the 1945-1946 season was a stag gathering held in the University Club Room of the Hotel Elton in Waterbury on February 1. Thirty-nine members attended and thoroughly enjoyed a splendid evening, arranged under the general chairmanship of Herb Polleys '18 and the active local direction of W. Wirt Young '29, who personally arranged for

that very popular clubroom bar, aided by Al Blank '37 and Harold Manning '12. A tasty buffet supper was served at 7:00 P.M., including butter, sugar (scarce items), and an unlimited supply of coffee.

Acting President Buck called for the Secretary's report, announced that dues were payable, read a letter from C. E. Smith '00 requesting membership co-operation with the placement committee's activities (Smith '00, Manning '12, and Haskell '26), and called upon Harold Manning for further comments. Harold informed the group that C. E. was absent, not because of his intended Canadian vacation, but because of serious illness. Charlie's absence immediately became very regrettable rather than excusable, and sympathetic expressions were forthcoming from all present. A letter from the International Silver Company regarding an open opportunity for a metallurgist in the nonferrous field was read, and publicity was requested.

Our ever popular but seldom available member, Hudson B. Hastings '07 ("Call me Hud, please") was introduced as professor of economics and head of the department at Yale. Hud forcefully, decisively, and in simple terms presented to a spellbound audience a summary of our present position with respect to inflation and labor. Facts were presented, such as the following: Demand deposits are now three times what they were in 1939 (65 billion dollars, not including government deposits); 23 billion is in circulation (seven to eight being normal); the gold supply is over 20 billion (it was two billion at the end of World War I); in addition, there are huge silver holdings; Federal Reserve restrictions are now nearly 100 per cent in force; the law on installment payments expires on June 30; the life of the Office of Price Administration is nearly over; management is necessary; labor is necessary; monopolies are regulated; publicity is a desirable influence. The professor indicated the fallacy of "chasing your tail" in trying to catch up with a solution, but he presented one which led to a lively question-and-answer period. This was arbitrarily terminated after twenty minutes because Hud had really come only to see the magician. A rising vote of thanks paid tribute in slight measure to Professor Hud.

Ira C. Williams, the magician, proceeded amiably, but completely, to baffle 39 of the world's best engineers (remember the world is in tough shape) with such problems as this: If that man had 16 cards in his pocket and this man had 14 only one minute ago, as they stand before you, how is it that they now have 13 and 17 cards respectively? Climaxed with the Chinese ring trick, the 45-minute performance was enthusiastically received. Chairman Polleys and Young were thanked for an outstanding evening, terminated at 10:15 P.M.

The following were present: H. L. Morgan '00, J. C. Bradley '07, H. B. Hastings '07, T. C. Merriman '09, C. T. Wilson '09, F. G. Smith '11, W. P. Green '12, H. G. Manning '12, B. P. Crittenden '14, R. L. Parsell '14, G. V. Maconi '15, F. G. Purinton '15, J. R. Freeman, Jr., '16, M. S. Wellington '16, Stuart Boyd '18, H. R. Polleys '18, Ettore Ciampolini '20, W. D. Pinkham '22, J. L. Hetzel '23, E. B. Haskell '26, A. P. Libbey '26, L. B. Cheney '27, L. B. Grew '27, D. S. Pope '27, F. W. Buck '29,

W. W. Young '29, F. P. Nettleton '30, F. E. Brooks, Jr., '31, Samuel Jacobson '31, A. M. Plant '31, J. E. Kearns '32, C. E. Fulkerson '33, G. C. Hudson '34, R. K. Roulston '34, A. I. Blank '37, C. A. Lytle '37; W. S. Wojtczak '37, Laurence Perkins '39, Dirk van Dongen '41. — LAWRENCE B. GREW '27, Secretary, Southern New England Telephone Company, New Haven, Conn.

Technology Club of New York

Judging from the increased tempo of applications for membership of late, all it takes to put life in our Club is a few words of warm friendship from Dr. Compton and his million-dollar smile. Ever since his 15th anniversary dinner, back in December, applications have been pouring in at such a pace that your Secretary has had a tough time keeping up with acknowledgments. But the more the merrier, and we feel very fortunate in the quality and number of new members whom we have taken in since the turn of the year. Thus far January has broken all records in new members, undoubtedly a bouquet to Sam Reynolds '22 and his membership committee. All Technology men are eligible and welcome to come aboard. Information on our facilities and membership fees will gladly be sent you on request.

During the month of December the following new members were admitted to the Club: Frederick W. Vaughan '34, A. J. Freiheit '22, Nathaniel Krass '18, Joseph Givner '22, Dudley L. Parsons '26, Martin L. Grossman '26, Nasib J. Anton '31, Ben K. Duffy '41, Samuel A. Scharff '43, John M. de Bevoise '42, and Roland D. Earle '28. On behalf of the officers and board of governors of the Club, your Secretary wishes to extend warm greetings to each of you. We hope that you will use the clubhouse to the utmost and that we shall see you at our outings and meetings.

Visitors to the clubhouse during December included these Alumni: D. B. Nicholson '42, W. H. Callahan '26, J. R. Killian, Jr., '26, Vice-president of M.I.T., G. S. Maynard, Jr., '33, W. R. Franklin '42, T. W. Ryan, Jr., '17, M. R. Scharff '09, E. V. Piel '38, D. D. Cassidy '97, Gray Jensvold '37, Henry Shore '24, N. J. Anton '31, and A. S. Heyser '26. There is considerable paper work involved in this job, and your Secretary humbly requests of all reading this news item, that guests please use their year of graduation when signing the register.

On January 17 the annual civil engineering luncheon was held at the Engineers Club. These have been growing steadily, and some 60 to 75 Alumni turned out for this one. By way of personal news this month, another one of M.I.T.'s mighty sons has been given national recognition. Without pressure or duress, we are glad to announce that the Johns-Manville Corporation has elected our genial and might I say portly, Club President, George Dandrow '22, to the office of vice-president and general sales manager of all industrial products. Nice work, George. And don't all of you men plug your commercials just yet. Give him time — he'll need it! Also, Don McNeal '23 has been appointed vice-president and director of the R. W. Hebard and Company, New York construction firm.

By invitation of the Technology Club of Philadelphia, your Secretary took in their dinner complimenting Dr. Compton on the 15th of January. Some 250 Alumni in that area turned out to hear a most informal talk by Dr. Compton and to do him honor. I was much impressed with the results of the efforts of H. W. Anderson '15 and E. S. Petze '28, President and Secretary respectively of the club, along with some 20 or 30 other prominent Alumni in that region, who have put their shoulders to the wheel and built a real club in the City of Brotherly Love. And they have published a membership directory of the club, which is a credit to any organization. We hope they will visit us sometime. I took particular pains to inform them of our facilities and our desire to have them either meet with us upon occasion or, who knows, even take out nonresident memberships.

Several loyal members of our Club sent me their present correct addresses. May I remind you again of the need for this, and that we give you two for one? When you write me, I pass it along to Charlie Locke '96 Alumni Secretary at the Institute. Having had no blasts from Win McNeill '17, Club Treasurer, lately, I assume that our finances are still intact. Jack Fruit '02 reports that the re-employment committee is proceeding with a minimum of red tape and a maximum of personal service for the benefit of the returning veteran. He is also in touch with several industrial organizations which have sought his help.

In closing this installment, may I again urge the classes to hold more periodic luncheons at the clubhouse. With the exception of '19, '24, and two or three others, there doesn't seem to be enough of this activity going on to suit us. I am on the lookout for good live-wire members of each of the classes, residing in Greater New York, who will volunteer to be spark plugs for such meetings. Any offers? Just telephone your name in to Mrs. Humphrey. I'll even supply you with the penny postal cards needed to send out notices to your classmates in this area arranging such a meeting. Last, but not least, I am still wanting personal news items for this sheet (apologies to Lobbie). Please send them along by telephone, postal card, letter, or anything. I'll read 'most anything you'll send me, please. — WILLIAM W. QUARLES '24, Secretary, McGraw-Hill Publishing Company, 330 West 42d Street, New York 18, N.Y.

M.I.T. Club of Northern New Jersey

On January 22, the Club had a highly successful and enjoyable meeting at the Essex House in Newark. This is the first meeting elsewhere than at the Newark Athletic Club, and the results can be classed as agreeable. The attendance proved that the Club is active. One hundred and sixteen dinners were served, and some twenty-odd (referring to the number and not to the people) were turned away because there wasn't room to serve them.

Carl Soderberg '20, Professor of Mechanical Engineering at the Institute, spoke on "Gas Turbines" and "Jet Propulsion." It was a highly worth-while evening for the group. The engineers present were familiar with the general subject and with

manifestations of these gadgets but weren't too well founded when it came to their logical place when put side by side with the cylinder steam engine, the steam turbine, the internal combustion engine — ordinary and supercharged — and the Diesel. Professor Soderberg traced the development from the practical design of steam engines around 1775 to the general theory of heat engines and the idea of maximum possible efficiencies (Carnot cycle), showing how work was done on so-called "hot air" or "caloric" engines to approach the Carnot ideas. The failure of engineers to develop such a cycle was due to the lack of suitable materials and techniques. The body of experience gained during the intervening years on turbines and internal combustion engines and supercharging equipment for planes has at last grown large enough to make a hot-air engine possible, and that's what a gas turbine is. Jet propulsion differs only in that mechanical coupling between the prime mover and the air is by direct contact of air with the expanding gases rather than through a propeller.

We were delighted to learn that even so modern a thing as a gas turbine still requires a starting motor, or self-starter. Some idea of size and performance was given by pictures and data for the 2,500-horsepower unit developed for the United States Navy and known as the Elliott-Lyholm unit. Some of the design problems were described, mainly those having to do with the high temperatures involved. These result in large expansions in the casings and red-hot turbine blades operating at high speeds — pretty good problems. Of interest to many were the speaker's comments on opinion as to the location of the dividing line for speed between propeller and jet propulsion. A point somewhere between four and five hundred miles an hour was named. Professor Soderberg ended with a description of the proposed gas turbine laboratory under way at Technology and of some of the work on this type of prime mover for both undergraduate and graduate students. After the formal meeting a bull session lasted into the wee small hours. Meanwhile, the bull was duly dunked in beer.

Coming back to the subject of "home-work" on the part of the officers — the boys have been hard at work trying to get their over-all system of rounding up Alumni in this area under control. The first problem was the mailing list. The Club has been sending out some 1,800 and more notices of the dinner meetings to the Alumni. For the last mailing, a select list of 500 and some was made up, taking the names from among those who have expressed interest by giving money, attending meetings, or simply answering mail. The boys have been working week ends trying to get the errors out of the mailing lists and we hope with some success. Picture Frank Pierson with three shoe boxes full of slugs from the printer, standing in front of a mirror and trying to read what was on the slugs.

A telephone committee has been revived so that each man on the "active list" gets called and reminded of a dinner meeting before it comes up. We made the most terrible mistake of putting Fred Kowarsky's telephone number on the dodger advertising Professor Soderberg's talk, and

Fred was literally driven crazy the last two days before the meeting by people calling in their reservations. . . . The fellows asked to serve on the telephone committee were glad to do their bit. Melville Blackwood '30 jumped at the chance. He said he was living over in Maplewood and didn't know another Tech man there and this would be the loveliest excuse to get himself acquainted with some of them. Jack Osborne '30 discovered that the best time to call was about noon on Sunday. Most everyone was in from the night before by then.

Following the example of some of the other M.I.T. Clubs, we are considering adoption of a constitution. A draft is in the hands of the officers now, and at the next meeting a consolidated effort should be presented to the members, who can then decide whether they want that constitution, a modified one, or none.

G. A. Chutter '21, who is doing placement work for Alumni in this area, reports that most of the activity is from ex-service-men who want to get a little orientation as to which way they ought to go. He finds that although many of the fellows are rusty on their engineering after nonuse during the war, most of them have acquired a maturity and judgment which overbalances the technical side. In the last five weeks, 16 men came in for placement and seven or eight have been served. The remainder will be placed without undue difficulty. J. F. Maguire '17 of the scholarship committee reports that he has had only two applications, since most of the candidates are being taken care of by the G.I. Bill of Rights. Apparently, the Institute will be about flooded with G-Eyes.

With Fred Kowarsky '21 at the helm on finance, the Club is solvent and has a little in the kitty for a rainy day — a highly satisfactory state of affairs. We are having the next meeting at the same place — the Essex House. L. G. Simons '32, we are sorry to say, has moved from this territory up toward Boston. He has left the M. W. Kellogg Company of New York City and is joining Charles T. Main, Inc., in Boston.

The following Alumni attended the meeting: G. M. Warner '91, W. R. Kattelle '00, C. M. Joyce '03, P. G. Hill '05, W. A. Taylor '05, J. E. Garratt '07, H. F. Ballard '09, H. C. Colson '09, L. R. Forrest '09, P. M. Wiswall '09, S. L. Henderson '10, G. G. Holbrook '10, F. P. Sergeant '10, R. O. Wood '11, E. M. Young '11, R. D. Bonney '13, G. A. Taylor '13, Kebe Toabe '15, R. E. Lowe '16, A. R. Brooks '17, K. M. Lane '17, C. W. Hawes '17, Frank Maguire '17, A. C. Walker '18, D. D. Way '19, G. F. des Marais '20, G. A. Chutter '21, Sumner Hayward '21, E. H. Kennedy '21, F. E. Kowarsky '21, E. S. Lockwood '21, C. D. Grover '22, H. D. MacDonald '22, P. S. Murdock '22, L. W. Trowbridge '22, E. W. Vilett '22, H. L. Hayden '23, J. M. Keck '23, W. S. LaLonde, Jr., '23, J. M. Robbins '23, C. E. Roche '23, S. H. Brown, Jr., '24, A. R. Gruehr '24, I. J. Korn '24, D. A. Straight '24, J. W. de Kay '25, E. T. Erickson '25, W. E. Perkins '25, Harry Newman '25, C. P. McHugh '26, O. B. Wiessner '26, R. A. Williamson '26, D. H. Spitzli '27, R. P. Westerhoff '27, R. E. Whitford '27, E. J. Deane '28, N. S. Foster '28, H. N. La Croix '28, W. H. Phillips '28, A. B. Marsh '29, F. O. Pierson '29, W. A.

Spofford '29, F. O. Urban '29, J. B. Osborn '29, N. H. Drake '30, G. E. Green '30, V. J. Duplin, Jr., '31, S. R. Fleming '32, A. M. Roscher '33, Peter Kalustian '34, D. C. MacMillan '34, W. L. Wise, Jr., '34, C. E. Mann '35, A. B. Gray '36, L. P. Hill '36, G. C. Putnam '36, M. F. Warmuth '36, W. A. Johns '37, Gifford Griffin '38, W. S. Shamban '38, J. R. Perkins, Jr., '39, G. W. Carnrick, Jr., '40, H. N. Cortle, Jr., '40, C. M. Edwards '40, D. H. Fleming, Jr., '40, R. S. Hess '40, H. K. Spaulding '41, G. H. Bell '42, H. D. Hoffman '42, L. T. Holden '42, H. H. Howell '42, A. A. Margolin '42, Alfred Stockfleth '42, J. E. Gardner, Jr., '43, R. C. Hess '44. After dinner we were joined by C. C. King '38, Oliver J. Kouyas '38, Joseph Wenick '21, A. J. Rogowski '34, and F. G. Cunningham '25. In addition to these listed about 20 guests or members who forgot to sign their names were present. — FRANK O. PIERSON '29, Secretary, 15 Wyndehurst Drive, Madison, N.J. JOSEPH R. PERKINS '39, Review Secretary, 341 North Fullerton Avenue, Upper Montclair, N.J.

Technology Club of Philadelphia

On January 15, the Philadelphia Alumni and their guests gathered at the Bellevue-Stratford Hotel for their annual dinner meeting, always an outstanding event, and this year doubly honored by the presence of President Compton, and Bradley Dewey '09. Old friendships were renewed, and new ones made, around the punch bowls before dinner. Bob Weeks '13, for instance, reacquainted himself with a classmate, C. W. Gotherman '13, after an interval of 30 years. The past presidents of our Club and principal present officers sat at the head table with Dr. Compton and Colonel Dewey. A traditionally short business session concerning elections followed dinner, and then our Club President, H. W. Anderson '15, introduced Colonel Dewey. Ex-rubber-czar Dewey impressed his audience with the necessity for scientists and engineers to concern themselves actively in the coming years with public affairs. President Compton then discussed the present transitional period at Technology and the plans for increasing Technology's service to the nation in the future. His address was highlighted by anecdotes of his Pacific tour, during which he met many Technology Alumni and visited the scenes of the atomic bombings. Several timely questions were asked of Dr. Compton after his talk.

Bill MacCallum '24, chairman of the nominating committee, reported the results of its cogitations and submitted a slate of officers for the coming year. In traditional log-rolling style, Bill got the unanimous vote of the members present for the following candidates: President, Herbert W. Anderson '15; First Vice-president, George T. Logan '29; Second Vice-president, Wendell N. Currier '31; Third Vice-president, Edwardes S. Petze '28; Secretary, Robert M. Harbeck '28; Assistant Secretaries, Samuel K. McCauley '41 and Frank S. Chaplin '32; Treasurer, Charles W. Stose '22; Assistant Treasurer, Harry E. Knox, Jr., '42; Executive Committee — Hermann W. Mahr '07, Edmund A. Whiting '15, Oden B. Pyle '16, Henry S. Dimmick '22, Henry W. Jones '26, Clarence W. Farr '33,

Robert E. Worden '36, and Karl E. Wenk '42.

The new membership directory was issued to all members of the Club and proved to be quite interesting and valuable. It contains a brief history of the Philadelphia alumni activities and a list of members with addresses and other pertinent data, as of November 1. It includes 219 Alumni in the area indexed alphabetically, by classes, and by company association. Fifty-two graduating classes of the Institute and 111 companies in the Philadelphia area are represented. We hope to print similar directories every year if this issue meets with general approval. Suggestions for improving the format and data will be welcomed by the secretarial staff. One important suggestion, of course, is that the Alumni pay their dues more promptly so that the directory can be more complete. Although a total membership of 252 was recorded after the January meeting, in the October campaign only 219 were prompt enough to be included in the first edition.

W. W. Quarles '24, former President of our Club and now Secretary of the Technology Club of New York, came over for the dinner. Wink invited Philadelphia Alumni to make use of the facilities of the New York club when in that area. It shares a clubhouse with Williams College alumni in a convenient location.

The dinner and meeting were attended by 198 Alumni and guests. Alumni present were as follows: 1897: Wilfred Bancroft; 1902: C. B. Annett; 1905: C. A. Anderson, B. E. Lindsly; 1907: H. W. Mahr; 1909: P. H. Chase, Bradley Dewey; 1910: P. W. Burnham, K. D. Fernstrom; 1912: C. A. Cary, C. L. Gabriel; 1913: C. W. Gotherman, W. G. Horsch, R. W. Weeks; 1914: Rupen Eksergian, A. P. Kitchen, G. E. Whitwell, L. A. Wilson; 1915: H. W. Anderson, H. F. Daley, F. J. Funk, Greville Haslam, H. E. Russell, Solomon Schneider, E. A. Whiting; 1916: Mark Aronson, O. B. Pyle, Jr., E. A. Weissbach; 1917: C. K. Allen, D. E. Bell, Garland Fulton, K. L. Harper, O. W. Holt, R. A. Pouchain, H. S. Toole; 1918: O. D. Burton, G. F. Halfacre, C. A. Lindgren, Jr., W. R. Robinson; 1919: E. J. Flynn, H. A. Kuljian, H. F. Marshall, F. A. Travers; 1921: J. E. D. Clarkson, T. D. Dutton, F. T. Flaherty, A. A. Orlinger, R. M. Shaw, Jr., P. B. Wendler; 1922: P. M. Alden, A. T. Barclay, H. S. Dimmick, Joseph Greenblatt, H. D. Haley, H. L. Humes, A. H. Kidder, Dexter N. Shaw, C. W. Stose, L. P. Tabor, L. S. Vadner; 1923: E. J. Healy, H. P. Kelley, F. E. Klutey, E. S. Pomykala, E. D. Ries, R. G. Rincliffe, F. H. Travers; 1924: W. H. MacCallum, W. L. Morgan, W. G. Peirce, Jr., W. W. Quarles; 1925: W. O. Schirmer, C. B. Weiler, R. N. Wheelock; 1926: F. N. Cramton, L. W. T. Cummings, A. M. Gates, Howard Humphrey, H. W. Jones, M. B. Morgan, M. S. Smith, W. E. Vaughan, F. E. Washburn; 1927: Constantine Bary, H. E. Muhlenberg; 1928: C. J. Bernhardt, C. E. Berry, R. M. Harbeck, Lycurgus Laskaris, E. S. Petze, C. H. Topping, F. P. Walden; 1929: G. G. Cudhea, D. R. Funk, G. T. Logan, V. G. Miskjian, L. C. Peskin; 1930: R. P. Crowell, Hugh J. Mulvey, N. F. O'Shea, G. D.

Schrader, W. H. Wannamaker, Jr., G. F. Wyman; 1931: R. S. Baldwin, A. D. Bertollett, W. N. Currier, R. S. Pollack, C. P. van Gelder; 1932: C. D. Cummings, John Lawrence, J. C. Lyon, E. B. McBride, M. T. Meyer, C. J. Stover; 1933: R. M. Armstrong, C. W. Farr, H. F. Tucker; 1934: W. W. Cogdill, J. A. Drankowski; 1935: J. B. Meakin, A. R. Anderson, W. H. Brockett, G. R. Bull, Jr., C. H. Ross; 1937: W. J. Maguire, A. E. Reinhardt, P. R. Scarito; 1938: Lloyd Bergeson, R. C. Eddy, L. W. Hull, J. H. Klaber, F. E. Ray, J. T. Wilber; 1939: N. E. Carr, B. A. Kleinhofer, M. C. Wardle; 1941: W. R. Burke, H. S. Kelly, Jr., S. K. McCauley; 1942: David Christison, C. W. Eckmann, H. E. Knox, Jr., A. G. Waggoner; 1944: W. D. Bowman, F. H. Sanders, R. L. von Berg; 1945: S. E. Haines, Jr.; 1947: J. N. Tariot.

For information about Alumni in the Philadelphia area, call JEFFerson 0642. — ROBERT M. HARBECK '28, *Secretary*, Fidelity Machine Company, 3908 Frankford Avenue, Philadelphia 24, Pa. *Assistant Secretaries*: SAMUEL K. MCCAULEY '41, 288 Coppley Road, Upper Darby, Pa.; FRANK S. CHAPLIN '32, 822 Glendalough Road, Philadelphia 18, Pa.

The Technology Club of Rochester

Favored by the genuine holiday spirit of a peacetime Christmas, the Club's annual yuletide luncheon swelled to an attendance of 48 members and guests, who descended upon the University Club on December 28. Traditionally this Christmas luncheon has been a meeting with Institute students from the Rochester area. During the past few years such a meeting has become increasingly difficult as the number of students dropped and their opportunities for holiday travel vanished. This year's luncheon, however, made outstanding progress on the road back to normal peacetime festivities.

A gradual deceleration of Technology's academic program permitted the holiday home-coming of 11 of the Institute's present students; namely — David W. Bareis '45, X; M. Richard Kondolf '46, XIII; John L. Langdon '49, VI; Richard Morse '49, II; Alfred J. Murrer '49, II; Helmut F. Onusseit '49, VI; Fred Radavich '45, III; Rolf I. Reizenstein '48, X; Edwin R. Smith '46, XIII; Theodore E. Thal '47, VI; Dwight van de Vate, Jr., '48, II. In addition, Avery A. Ashdown '24 fortunately happened to be in town at the time of our luncheon and was able to attend.

Immediately after the soup, our President, Harold E. Akerly '10, led off with the informal introductions — each man standing in turn to announce his name, year, and course. During the dessert, President Akerly announced plans for the next meeting, late in February. Lee A. du Bridge, director of the M.I.T. Radiation Laboratory during the war, is returning to his post as dean of arts and science at the University of Rochester and has tentatively agreed to be the speaker. Richard Kondolf and Edwin Smith, the two representatives of the Senior Class, then reported on student life at the Institute. From their accounts, it seemed that Technology has been remarkably little changed during the war years. Their description of the aca-

demic program struck familiar notes in the memories of all! Furthermore, sports and activities are being continued with ample support and with far greater success than we had thought possible.

Professor Ashdown concluded with a few remarks based upon his strong conviction that peace does not mean the rebirth of the Institute's normal activities, which were continued throughout the war, but only a decline in its abnormal activities, and emphasized his point with several anecdotes about the successful maintenance of normal sports, activities, and other projects. Despite the number of times we have heard of Technology's enormous expansion and amazing contribution to the winning of the war, it was difficult for most members to comprehend the extent of the Institute's facilities and activities as Dr. Ashdown briefly enumerated some of them. Equally astounding was the number of returning servicemen who have applied for admission to M.I.T. Gasps of amazement greeted Dr. Ashdown's report of 3,000 applications a week, with a total in excess of the entire Alumni body!

The luncheon closed with an expression of appreciation to the present students and to Professor Ashdown for a most interesting "return visit" at the Institute. Members of the Club who attended the luncheon were as follows: Harold E. Akerly '10, Collin H. Alexander '39, Christopher G. Boland, 3d, '45, Arthur H. Bond '15, Howard F. Carver '32, Kendall B. Castle '24, Allen L. Cobb '26, C. King Crofton '22, Henry R. Couch '20, Alfred Dasburg '36, Vincent J. Dobert '36, Edward S. Farrow '20, M. Wren Gabel '39, Howard S. Gardner '30, O. Glenn Goodhand '31, Arthur S. Hamilton, Jr., '35, Frederick J. Hopkinson '20, Carlyle W. Jacob '36, Donald B. Kimball '20, Frederick J. Kolb, Jr., '38, Andrew Langdon '22, Lynn A. Loomis '08, Emery M. Low '29, Kenneth J. Mackenzie '28, Lee McCanne '27, Leon L. McGrady '17, Richard F. Morse '45, Frederick W. Paul '35, Ralph W. Peters '30, Harold L. Smith, Jr., '39, Cyril J. Staud '24, Dwight Vandevate '22, Stanley C. Wells '30, Paul B. Wesson '98, Richard M. Wilson '30, Clarence L. A. Wynd '27. — FREDERICK J. KOLB, JR., '38, *Secretary*, Building 14, Kodak Park, Rochester 4, N.Y.

Technology Club of Shanghai

The meetings in September and October have already been reported. Since then we had a social meeting on November 24, with an attendance of 78 persons, among whom were Te Pang Hou '17, Teddy F. Walkowicz '41, William J. McAvoy '34, Frederick F. Schaller '39, and others. On December 29 we held a business meeting, when the financial situation was reported and new officers for 1946 were duly elected, as follows: Robert F. Seedlock '40, President; Ji-Dah Woo '38, Secretary-Treasurer; Teh-Ching Li '37, Assistant Secretary-Treasurer. Because of the changeable situation, addresses for the members have to be revised from time to time, and no directory has been published for the year 1945. It is hoped that as time goes on a complete directory may be compiled and printed, as during the years before the war. Up to the present, nothing definite has been

decided, or done, for the China Institute of Industrial Training. — TSU-KANG HSUEH '24, 51 Passage, 646 Tiendong Road, Shanghai, China.

Washington Society of the M.I.T.

The Society met as usual on the second Thursday, January 10, in the Young Women's Christian Association. These monthly gatherings of ours are always dinner meetings to which out-of-town Alumni are welcome. As Washington continually attracts Tech men for one reason or another, we find new men turning up every month. Join us if you are in town on second Thursdays.

This time Harry Fisk '22 had a musical treat for us other than the quartet. R. W. West '32 strummed a mean banjo in a few peppy numbers. We'll have to hear him again. He was good. President MacMahon had a fine speaker in Captain Richard Gunter, of the Army Engineers. Captain Gunter had begun the war as an enlisted man and had gone up through the ranks to that of captain. He was proud of his branch of the service. Other Army Engineers in the crowd, of course, nodded agreement.

The Captain was specifically assigned to study and direct river crossings, but he detoured from this theme for a moment to pay tribute to the engineer force which landed on Normandy four hours before the first combat troops arrived in their landing craft. These men removed obstacles from the beaches under fire from the defending forces and paved the way for the invasion, suffering heavy losses. As our forces broke out of the beachhead, there were rivers to cross requiring bridging by outfits such as that under Captain Gunter. The Captain described the equipment that the bridging crews used for various types of crossings. The last big crossing, over the Rhine, interested the Captain most because it was the widest river yet attempted by his forces, and if crossed, the whole tempo of the war would be changed. The crossing of the Rhine at Remagen, near the Ludendorf Bridge, was the climax of the address. Our speaker, interested in trophies, brought along a dozen or so assorted bayonets, daggers, and other Nazi cutlery, which made quite a display, surrounded by Nazi flags of various sorts.

After a question period, the meeting closed with the Stein Song. Present were: 1889: G. W. Stone; 1890: J. G. Crane; 1892: B. P. du Bois; 1893: P. H. Thomas; 1904: A. M. Holcombe; G. N. Wheat; 1905: O. C. Merrill, E. T. Steel; 1909: B. A. Robinson; 1912: A. M. Pedersen; 1915: A. D. Beidelman; 1916: W. H. Blank, F. P. Upton, W. E. Wentworth; 1917: E. J. Grayson; 1919: E. M. Kenison, L. J. Grayson; 1921: L. W. Conant; 1922: H. H. Fisk, W. K. MacMahon, J. R. Morton, Jr., John Nolen, Jr.; 1924: R. P. Schreiber; 1926: T. L. Soo-Hoo; 1927: G. E. Thomas, E. G. Cowen; 1928: G. D. Mock; 1929: J. W. Gaffney; 1930: A. F. Bird, C. W. Maskell; 1932: Lester Glickman, F. M. Moss, R. W. West; 1936: H. F. Lippitt; 1937: G. B. Hunter, Jr.; 1941: F. Hawkins. — FRANK W. MILLIKEN '04, *Secretary*, 613 Greenwich Street, Falls Church, Va., ALBERT F. BIRD, '30, *Review Secretary*, 5070 Temple Hills Road, Southeast, Washington 20, D.C.

CLASS NOTES

1883

Harvey N. Mansfield died on December 20, at a hospital in Tampa, Fla., at the age of 84. He had retired from business and had been in poor health for several years. He was born in Wakefield, Mass., where his body was brought for burial in the family plot, after services at Tampa.

After graduation from M.I.T., he was consulting engineer in Boston before coming to Florida in 1907, when he became associated with the Palmetto Phosphate Company. He was chairman of the Polk County Good Roads Association, and played a leading part in procuring the first extensively paved roads in Polk County.

In 1922, Captain Mansfield went to Colombia, South America, on an engineering project and came to Tampa a year later, where he has lived since with his two sons. Surviving are his sons, Clifford B. Mansfield and Francis R. Mansfield, both of Tampa; a granddaughter, Mrs. Welch Bremer of Orlando, and one great-grandson. — HORACE B. GALE '83, *Acting Secretary*, 10 Highland Street, Natick, Mass.

1886

Walter Renton Ingalls, who experimented with zinky ores in the metallurgical laboratory in Rogers Building, beginning in 1885, and has been concerned with that branch of metallurgy ever since, is widely known as the dean of the American zinc industry. His treatise on the *Metallurgy of Zinc and Cadmium*, published in 1903, was the first on its subject in any language. He writes me that 40 years after its publication copies of it continued to be sold and adds that in 1945 he contributed to Liddell's Handbook a 30-page monograph on "Pyrometallurgy of Zinc," reviewing that subject up to date. As consulting engineer in New York and as director of the American Bureau of Metal Statistics, he continues to be active. You may be interested to note in your record of the Class of 1886 that at the annual meeting on January 8, he was elected honorary member of the Mining and Metallurgical Society of America, of which he is a past president. The citation was as follows: "For outstanding contributions to the metallurgy of zinc and lead, to the literature of the mineral industry, to statistical study of the nonferrous metals and to the economics of mineral enterprise, over a long period of years." Professor Robert H. Richards was a sole honorary member, and since his death there has been no other until now. — ARTHUR G. ROBBINS, *Secretary*, 12 Grove Street, Winchester, Mass.

1887

During the past month your Secretary has been in receipt of many more communications from classmates than usual, many of them being expressions of regret at the sudden decease on December 12 of our lamented Vice-president and Treasurer, Winthrop Cole, an irreparable loss to the Class. George Armington, who is now sojourning at 1111 Twenty-third Avenue North, St. Petersburg, Fla., writes the Secretary as follows: "I have just received your card announcing the death of Winthrop Cole. This is quite a shock. As our

hours were the same throughout the last three years at Technology, I saw a good deal of him and regret that I have been unable to see more of him since. I have wished many times that I could have followed up my contacts at the Institute. Thank you very much for sending me this sad news." — A letter from Frank Shepard expresses his deep sorrow at our loss of Winthrop Cole. "The passing of Winthrop Cole," he writes, "was a great shock and sorrow to me, for I was one of his close friends during Tech days, and I shall miss him greatly. Mrs. Shepard and I had sociable chats with him during the Alumni Banquet last June. It was such a pleasure for Mrs. Shepard and me to see you during the banquet, and I am sorry that we did not have more time to talk things over."

Mrs. Oren S. Hussey, whom we always remember with the class greeting card at the Christmas season, writes the Secretary as follows: "Among my treasured Christmas cards received is that of the Class of 1887, and I was doubly pleased to find your address on the envelope permitting me to express my appreciation to a member of the Class. M.I.T. '87 became my great interest in early 1884, and through all these years whatever pertains to it still interests me. A happy New Year to you and all the others." Also from our old friend, Frederick G. Fassett, Jr., now of Washington, D.C., comes the following interesting and heartening message. "I was more delighted than can be said," writes Professor Fassett, "at having the Christmas card of 1887 to bring back all sorts of pleasant memories — my very best wishes to you and the Class."

Your Secretary was quite surprised and greatly pleased to receive a few days ago a letter from William A. Bryant '13, son of our Henry F. Bryant, whose memory we all cherish so dearly. He writes: "Please accept my thanks for the greeting card from the Technology Class of '87. After some wandering it finally caught up with me. Perhaps the members of the Class would be interested in my doings for the past few years. Soon after the war broke out, it seemed evident that private businesses such as I was conducting were headed for inactivity in a big way, and I wasn't big enough to get into government work, so I closed the doors for the duration and took a job with the Charles T. Main Company here in Kingsport, Tenn., and helped in the construction of the Holston Ordnance Works here for about a year and a half. My work was in responsible charge of the construction of the raw products, or acetic acid, manufacturing area of the plant, which lies some seven miles from the main explosives plant. An idea of its magnitude may be obtained from the fact that they spent about 125 million dollars on it. When this plant was completed, I went on to Knoxville and assisted in the work at Oak Ridge, Tenn., where the atom got smashed. I first went to work for the architects, Skidmore, Owings and Merrill, but as their business dropped off, I got a position with the Kellogg Corporation, which designed the tremendous plant to be operated by the Carbide and Carbon Corporation under the gaseous diffusion process. My work there ran for 13 months out of the two years I was in Knoxville. Since it ended, I have returned to Kingsport and am at present employed by Allen N.

Dryden, an architect, and we are tremendously busy. In fact, we have so much work on hand that we are sunk far below the surface with no signs of catching up. Even though I have kept my office in Brookline, it begins to look as if my future were here and I should not reopen the Brookline office again. We have much to be thankful for, now the war is over. My boy was in the Army and has recently been discharged after three years of service, although he spent the last year of it in the Hot Springs hospital recovering from an attack of poliomyelitis. My youngest daughter has finished high school and this fall was enrolled in the last Cadet Nurse Corps to be formed at Western Reserve University in Cleveland, Ohio. She finds the work hard, but very interesting. My wife joins me in sending our best wishes to everyone."

Mrs. Haviland, daughter of our former classmate, William C. Cushing, in a recent communication to the Secretary, writes: "I want to thank the Class of '87 so much for the Christmas wishes, and you yourself for your thought in sending the card. It is a very heart-warming custom, and I do appreciate it." Mrs. A. L. Cushing also sends the following token of esteem to the Class, through the Secretary: "My deepest appreciation for the season's greetings from the Class of '87 at Technology in memory of Bert. I want to extend my heartfelt New Year's wishes for the happiness of all." The Secretary was further favored with letters from Mrs. Hollon Spaulding, Franklin Brett, Herbert Wilcox, Frank Shepard, and others, but as these notes are more varied and extensive than for many moons, we will take pity on the editorial department and save them for the backlog of our next class notes to The Review. — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

1888

I regret to tell you that George W. Roper passed away on January 6 at his home in Norfolk, Va. Physically and mentally he was one of the outstanding men of the Class. As a freshman in 1884-1885, he used to train for distance running before breakfast each morning by running up and down Warren Avenue near Dartmouth Street, before winning the "mile run" mentioned below. He took the Course in Civil Engineering and put his knowledge to good use in building railroads, drydocks, marine railways, and so on, in Virginia and North Carolina. His first work was the building of the A. & P. Railroad in North Carolina, a short railroad peculiarly constructed. He wrote in 1923: "Some years ago I had the pleasure of seeing Harry Horn, also of our Class, full of experience, having 'made good' in many positions of great responsibility. However, neither of us could think of anything that surpassed that 'mile run' race at Lynn in which yours truly won all the prizes that were (and one that wasn't — the state record; medal for which was sent me). Horn was the only one of the several thousand there who bet on me, and as he held my hat and encouraged me, I felt bound to win the race."

Roper was afterwards vice-president of the John L. Roper Lumber Company until 1906, when he was made president. In 1906 he was instrumental in the formation of

the Virginia and Carolina Coast Railroad. The lumber company merged its railroad (the A. & P. R.R.) some years previous to this, with the Norfolk and Southern Railroad. Soon after the formation of the Virginia and Carolina Coast Railroad, this was merged with the Norfolk and Southern. Roper was made a vice-president of the N. & S. R.R. and was president of the J. L. Roper Lumber Company. He continued with the railroad and lumber company (designed and built all its mills as well as operated them) until the summer of 1910, since when he had been a free lance. Beginning in the '90's, however, he had organized various enterprises which are still on the map much enlarged. Roper was the president of each of them, save only the Norfolk Veneer Company, which he had reorganized and turned over to his partners. He headed the following: The Norfolk Marine Railway Company, Inc. (shipyard); Norfolk Shipbuilding and Dry Dock Corporation; Southern Supply Company (general contractors, railroad and mill supplies), and several other smaller corporations. He was also vice-president of the Virginia National Bank and vice-president of the Virginia Bank and Trust Company of Norfolk. He was interested in the timber business and had a timber company of which he was president, doing business in Virginia and North Carolina and owning certain railroads and equipment. Roper's home was at 320 West Freemason Street, Norfolk, Virginia, a fine old Southern mansion.

Your Secretary received a telegram from Mrs. Roper on January 7 telling of the passing of George and immediately wired her two dozen pink 'Briarcliffe' roses in the name of the Class, for as we lived in Norfolk during the winter of 1937-1938, we knew the Ropers very well and enjoyed their hospitality on many occasions in their colonial mansion on Freemason Street, where he passed away. He was very fond of all his classmates, especially of the Civils with whom he came in close contact. He was a generous subscriber to the class alumni fund. We shall miss him very much.

The Secretary received Christmas greetings from Harry Bates, Herbert Bird, and Sanford Thompson, to whom he wishes to return his thanks. — BERTRAND R. T. COLLINS, *Secretary*, 76 Murray Place, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1890

The Secretaries had the pleasure of the company of John Crane at the Alumni Council meeting in November. He had come over from Washington to spend Thanksgiving with his brother, who is a member of the Council. Flint made his customary hegira from Pennsylvania to Florida in November, his address this winter being 754 Fifth Avenue North, St. Petersburg 4. Mary L. W. Morse has changed her address from Poland, Ohio, to 459 Alameda Avenue, Youngstown, Ohio. Billy Poland has changed his address in Washington to 1310 27th Street, Northwest.

News of the loss of three more members of the Class has been received. Charles F. Fitts died on October 17. Born in Haver-

hill, Mass., he attended Technology for a year but was graduated from Williams College and began his career as a patent lawyer. He was at one time connected with the United States Patent Office in Washington, where he met and married Martha B. Minetree, who survives him. In 1905, according to the *Railway Age*, "he became connected with the Rodger Ballast Car Company and after holding various positions was elected vice-president. In 1941 he was elected president which position he held at the time of his death." Although he had coronary thrombosis attacks over a period of 14 years, he continued in active business up to four weeks before he died. He is also survived by two daughters.

Every time one of our Course IV men passes on, the Secretary is impressed with a sense that this course had a remarkably able, broad, cultured, and competent group and that we have missed much in not being able to draw more of them back to our reunions. Once again this feeling is aroused by the following from the obituary notice, in the *Washington Star*, of "Frank C. Baldwin, architect, writer and civic leader," who died in Washington on November 25. "Born in Galesburg, Illinois, he was graduated from St. Paul's School and was a student in architecture at M.I.T. from 1887 to 1890. For 18 years he had been a member of the Stratton-Baldwin firm of architects in Detroit before he went to Washington. He was a Fellow of the American Institute of Architects and was Vice President from 1911 to 1914 and Secretary and Director from 1926 to 1934. Three times the State Department appointed him to represent the United States at sessions of the International Congress of Architects, in London 1906, Rome 1909, and Budapest 1930. He was President of the Architects' League of America and the author of 'Baldwin's Specification Index.' In addition to writing on architecture, he contributed magazine articles on exploration and big game hunting, describing his trips to Alaska and British Columbia. He had been a Director of the Detroit Trust Company, the Planters National Bank of Fredericksburg, Virginia, President of the Farmers Creamery Company, and Trustee of hospitals in Virginia and Nantucket, Massachusetts, where he had a summer home and belonged to the Yacht Club. He is survived by his widow, Mrs. Alice Storrs Baldwin."

Ernest H. Brownell, a captain in the Navy, died on December 19, after a long illness at Newport Naval Hospital. He had already received an A.B. degree at Brown University before coming to Technology, where he was graduated in Course I and later did some postgraduate work. At our 50th, he reported 12 years' connection with instruction at Brown, although he was doing some consulting and some work for the Army during this period. According to the *Providence Journal*, "he was commissioned in the Civil Engineers Corps of the Navy in 1902 and rose through the grades to Captain on June 3, 1922. He retired in 1929. For a time he was head of the Department of Yards and Docks at the Cavite Navy Yard in the Philippines. Other important Navy construction in which he had a part included the Puget Sound dry dock, the Portsmouth, New

Hampshire bridge, and the Pearl Harbor fuel plant. He was a member of several societies and also maintained an active interest in the civic affairs of Newport. He married Annie May Angell who survives him, with two sons, both Commanders in the Navy, and two daughters, one of whom, Dorothea DeWolf Rathbone, was a member of the Class of 1920 at Tech."

The Alumni Secretary has notified us that it is proposed to have a special Alumni observance on Saturday, June 8, which will partake of the nature of pre-war Alumni Days, with symposium, open-air luncheon at noon, and banquet in the evening. — **GEORGE A. PACKARD**, *Secretary*, 50 Congress Street, Boston 9, Mass. **HARRY M. GOODWIN**, *Assistant Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1893

Notice of A. L. Kendall's death on January 23, appeared in the Boston papers as follows: "Albert L. Kendall . . . retired fire protection engineer, died today at his home. He was graduated from . . . Technology in 1894 and worked for the Associated Factory Insurance Company of Boston, retiring 10 years ago. He was a lieutenant colonel in the first world war and was a member of the Framingham American Legion post. He leaves a brother, Frederick A. Kendall, Framingham building inspector." The funeral service, held at Cookson Chapel in Framingham at 2:00 p.m. on January 26, was attended by a detail from the local post of the American Legion and the Classes of '93 and '94 were represented by H. N. Dawes, F. H. Keyes, and Samuel C. Prescott '94. Although Kendall was graduated with the Class of 1894, most of his work at the Institute was carried on with the Class of 1893, with which he maintained active social relations. An account of his military activity in connection with World War I may be found in the '93 class book, published at the time of our 30th reunion at the Wianno Club. — **FREDERIC H. KEYES**, *Secretary*, Room 7-211, M.I.T., Cambridge 39, Mass. **GEORGE B. GLIDDEN**, *Assistant Secretary*, 551 Tremont Street, Boston 16, Mass.

1894

Walter V. Brown, who retired several years ago from a managerial position at the Engineering Society in New York, seems to be one of the lucky ones who can avoid northern winters by migrating South like the birds. Very recent news gives his present address as 459 South Main Street, Orlando, Fla. A change of address has also been received for Frank Drake, who, after a busy career as a mining engineer, is now located in San Francisco. He has been connected for a year or two with the Miller Moving and Storage Company, 370 Turk Street, and early this month sent in 241 Jones Street, San Francisco 2, as his residential address. As the Secretary may happen to visit San Francisco and Los Angeles in March, he may find opportunity to call on Drake, whom he has not seen since 1894. It would be a pleasure to meet him again, although he has not kept in touch with the Class since he was a student.

It is with regret that I report the death, in Framingham Center on January 23, of Albert L. Kendall, who was graduated with our Class in '94, although he entered

with, and for most of his course was more closely associated with, '93. As his final year was with '94, he had many friends in the Class, and gave allegiance to both classes. Kendall was born in Framingham in 1869 and was therefore 76 years of age. He early became interested in military affairs, was in the National Guard, and served in both the Spanish-American war and World War I. He held the rank of lieutenant colonel at the end of the latter war. In civilian life he was for many years with the Associated Factory Mutual Insurance Companies of Boston, retiring about 10 years ago. He was unmarried. Possibly the '93 class notes may give other details of his career. The Secretary knew him for many years in a very friendly and unofficial way, as both were members of a small fishing club in Maine and had fished together there on numerous occasions. He was a good friend and a loyal Alumnus.

News has recently been received of the death of Isaac Weil, who was for the year 1892-1893 associated with our Class. He came from New York, had a Ph.B. degree, and spent a year in the study of mechanical and civil engineering. During World War I, the Secretary met him in Washington, where both were majors in the War Department. Weil was later with a number of government departments: in 1930 with the United States Shipping Board Emergency Fleet Corporation; in 1937 with the public buildings branch of the Treasury Department; in 1942 with the Federal Housing Authority; and in 1944, as a supervising engineer, with the Defense Plant Corporation in Baltimore, where he died on November 30.

On January 28 a letter was received from Mrs. Raymond Price stating that, on January 15, Ray had been taken to the hospital at Lompoc, Calif., following a heart attack, but was apparently recovering well. On January 31, the Secretary received a telegram stating that he had died that morning, presumably from a second and more violent attack. Many members of our Class and many others will feel deep sorrow on reading the sad news. As a warm friend since our freshman year, and especially in the past 20 years, the Secretary feels a very deep sense of personal loss. In Price's passing, the Class has lost one of its most distinguished and successful members, for he was a man of rare personality, of vast breadth of interests, of remarkable business ability, and of deep loyalties, both to individuals and to great causes. Raymond Beach Price was born at Newark, N.J., on December 4, 1872, the son of David F. and Margaretta Beach (Crowell) Price. He was a graduate of the Boston grade schools and English High School and entered the Institute in September, 1890. As the major of our freshman battalion, he was probably the best-known man in the Class in student days. A brilliant and thoughtful student, in the Course in Chemical Engineering, he prepared thoroughly for his life work, but also found time to be a leader in student affairs. He possessed the highest qualities of leadership, combined with great modesty and seriousness of purpose.

After graduation he was for four years chemical engineer for the Boston Woven Hose Rubber Company. In 1896, he visited

all the important rubber plants in Europe, seeking to learn everything possible about this commodity. Failure of the company in 1898 was a temporary disaster to him, and he again began at the bottom of the ladder. He was for six months superintendent of the Peoria Rubber Company, and then helped to organize the Calumet Tire Rubber Company in Chicago, and was successively superintendent, vice-president, and manager. A tireless worker, he built up the company but personally suffered two physical breakdowns, in 1900 and 1902. After his recovery, he visited Mexico and made a careful investigation of the possibilities of rubber culture in Tehuantepec. He was probably the first person to study guayule as a source of commercial rubber. He was the patentee of many processes in the industry. Perhaps most important was his discovery of methods for regenerating used rubber; these proved to be the basis for a very successful manufacturing business, the Rubber Regenerating Company, which he established at Mishawaka, Ind., and of which he was president for years. His company also established a large branch factory in England.

Eventually this business was merged with the United States Rubber Company; Price became a director and for some time a vice-president of this corporation and was long associated with it. He also became interested in, and a director of, other concerns dealing with rubber. Business took him abroad a great deal. He lived for several years in Paris, traveled widely, and became thoroughly familiar with the rubber industry throughout Europe and also with general political and social movements. This knowledge might have been of great value to this country in the early days of World War I but was not fully appreciated by those in power. In 1916, Price was a member of the important Committee of Alumni on Preparedness, organized by the Technology Clubs, Associated, to promote research and to secure information of service to the national government, and rendered valiant service. Later, throughout the war, he was very active in efforts of the Conference Committee on National Preparedness with headquarters in New York, and was treasurer and an ardent supporter of this important group.

Price was most happily married to the daughter of a distinguished French diplomat who had held important posts in various parts of the world. Mrs. Price had been the homemaker of his household and had all the admirable qualities of charm, fine personality, clear knowledge of world affairs, and excellent executive ability. It was a perfect union. Since she shared Ray's fondness for travel and observation, they journeyed very widely, almost literally to all quarters of the globe and as a result were unusually informed on the economy and internal situation in many countries. Among their travels, surveys of all South America and Africa by airplane and a few months in the lion-hunting country of East Central Africa were especially notable and much enjoyed.

Before World War I, Price had purchased a beautifully located ranch at Los Alamos, Calif., and here established his anchorage to his own country. For some years before the outbreak of World War II, however, in

order that Mrs. Price might be near her father during his last years, Price and his wife had made their principal residence in a beautiful apartment overlooking the Seine in Paris. With the outbreak of World War II inevitable, they hastily closed their apartment, returned to the United States, and re-established themselves at the ranch. When the Germans took Paris, their apartment was seized by a German officer, and later reports informed them that many of their treasured possessions had been stolen or destroyed. A letter from Price a few months ago told of their intention to return to Paris to investigate the tragic situation and recover what was possible. This was destined not to be.

Thus another of the men of our Class who have been foremost in carrying on the ideals of the Institute has gone from our diminishing ranks. We have lost a classmate and friend of great ability and nobility of character, and the Institute a son who has ever been a fine and worthy representative of its training and standards. — SAMUEL C. PRESCOTT, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1896

The annual gathering of the New York classmates is scheduled for 6:30 p.m. on Wednesday, April 17, at the President Tavern, 364 Lexington Avenue. If any classmates from outside New York should by chance happen to be in New York City on that date, they will be most welcome to attend.

Joe Harrington, with Mrs. Harrington, came East to spend Christmas with their son in Wenham, and it was a real pleasure for the Secretary to receive a telephone call from Joe on December 28. It also made the Secretary happy to receive Christmas greetings from several classmates, including Rutherford, Melluish, Sager, Jacobs, Lythgoe, Tilley, Hersey, Wayne, Tucker, Chenery, and Flood.

Billy Anderson has written Rockwell that his son Bill (M.I.T. '41) came home to Cincinnati the week before Christmas and was definitely out of the Navy with the rank of lieutenant commander. Rockwell has received word that Clarence Perley is in poor health, having been hospitalized in Washington since last July. Chenery has reported to Rockwell that in spite of his infirmities, which circumscribe his life, he does find plenty of things to do to keep occupied, and his philosophy of life is that he is still keeping young by maintaining a keen interest in present-day affairs, in spite of his inability to get around any longer.

The exodus to Florida continues, and the latest word on classmates flitting South includes Charlie Moat, Dan Richardson, and Hattie Gates. Richardson is located at the Sarasota Trailer Park in Sarasota. Miss Gates, who has now become a retired teacher in the Boston Public Schools, is making her stay in Florida from January to March.

Bradley Stoughton is reported to be back on his job at Lehigh University in Bethlehem, Pa. Classmates will be interested to know that Frank Guptill's son, Frank, Jr., (M.I.T. 10-44), has been the recipient of the Distinguished Flying Cross, the Air Medal with three stars, and the Purple Heart, Japan. The Secretary has received

from Paul Litchfield a copy of his latest publication on rigid airships. Rockwell was Fred Damon's guest at the Shrine luncheon of Aleppo Temple, held in the Copley Plaza on January 23, when Dr. Compton was the guest speaker. They saw Grush there, and Grush reported that Perry Howard was also present and that there may possibly have been other classmates attending who were overlooked in the crowd. Another honor has come to our Dr. Coolidge in the form of the Jewel of the Order of Merit of the Chilean Government.

In January, the Secretary sent out to all classmates a notice regarding attendance at the graduation exercises scheduled for Symphony Hall, Boston, on Monday, February 25, when as the 50-year Class we are given the honor of being seated on the stage with the Corporation and other officials. The Class is to be honored by having Arthur Baldwin as its representative and speaker on the program of Class Day in Walker Memorial, on Saturday afternoon, February 23. With that notice was also sent a bulletin to every classmate telling of the definite plans for the observance of our 50-year reunion at East Bay Lodge, Osterville, Mass., on Thursday, June 6, and Friday, June 7, to be followed by participation in the grand celebration at M.I.T., Cambridge, on Saturday, June 8. This, of course, will be the big time for our Class, and everyone should make a special effort to be present.

Our Alumni Fund record for the current year is running along about as in the past. As of December 31, we made 115 per cent of our quota in number of contributors but only 85 per cent of our quota in amount contributed, and there seems little likelihood that we shall reach 100 per cent on this last item. In fact, in no year since the Alumni Fund started has our Class reached its quota in the amount contributed. However, we shall soon forget the current year and be dealing with the next fiscal Alumni Fund year, which begins on April 1, when we shall be bending our effort to making a grand contribution to the Alumni Fund as our 50-year gift to M.I.T. It seems as if everyone could at least make a token contribution, and that those who have been contributing in the past should make a marked increase in their giving in our 50th year.

Professor Frederick K. Morris of the staff of the Geology Department at M.I.T. reports that word has come to him through the Department of State in Washington that our classmate, A. W. Grabau, is residing in the British Embassy compound in Peiping, China, where he is invalided by age, severe arthritis, broken hip bone, and other ailments. He is without funds or property and is in need of financial assistance. His presence in the British Embassy is easily explained by the fact that the Japanese used it as a prison and interned him there. The proposal is to remove him to the hospital of the Rockefeller Foundation in Peiping, where it is understood that hospital facilities have again become available. Grabau is of international reputation as a distinguished scientist in his special field of geology, and his misfortune is due, not to his own mismanagement, but to a major war. Professor Morris is soliciting funds, which need not be large in amount, but only sufficient to

enable Grabau to be treated in the hospital until he can be removed to a suitable house in Peiping, where he can have a good Chinese boy to look after him — better and at less expense than he could be cared for in America. Any classmates who desire to share in this worthy cause should send their contributions to Professor Frederick K. Morris, Geology Department, M.I.T., Cambridge 39, Mass.

These notes cannot be wound up in any better way than by giving another of Bob Flood's reminiscences, as follows: "There was a fraternity brother of mine at Tech, Billy Potter '97, one year after me in college. Billy left college a mining engineer and went prospecting in the western fields with a classmate, also a mining engineer, Thurlow Washburn '97. They rode horses over a large area. A third young fellow joined them. They had ridden for days, sleeping out nights when they came to an abandoned cabin. 'Let's sleep inside,' they said. 'It looks like rain.' 'I'm going to sleep in the middle, if we do,' spoke up the third man. That was agreed to. They cleared out the cabin, gathered boughs and leaves for the bed, threw their blankets over it, and turned in. Now it seemed it was the custom of a cat in that district to seek shelter in that cabin in case of storm. A storm did come up in the night, and the aforesaid cat made for the near-by tree, climbed up, dropped on the roof, scrambled to a hole in the roof, and dropped down on the stomach of the man sleeping in the middle of the bed. The cat would not have been so frightened had it not been for the piercing shriek of the stranger. Pandemonium reigned in that little cabin until the cat found a way out. The stranger made a quick decision. He would go it alone, beginning at once. In the course of time the other two located a claim on a mountain. Potter's friend was to stay there and work it. Billy was to come home and raise the money. His friend undertook to come down too early in the spring, and was caught in a snowslide and lost his life. Billy went to New York, got mixed up with the Guggenheims, was a mining engineer for a time, and then went to New York in their banking interests, I am told. Anyway, he has been a banker in New York ever since. Last time I was in New York I thought of calling on Bill but was advised not to — too busy. Still, it would have been nice if any of the fellows had seen me coming out of the office of the chairman of the board of the Guaranty Trust Company of New York. Shucks! I bet yuh he'd a said howdy anyway 'nd thrown me the grip. I've known him since he's been wearing long pants." — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1897

Your Secretary is getting desperate in an attempt to obtain copy for the class news column. He has at last been successful in soliciting the services of a dis-Associated Press news correspondent to keep him informed as to the doings of our classmates in Washington. We have four members in that city, Howes, Dougherty, Loomis, and Hunnewell. Hon. Dougherty annexed the handle to his name when he was appointed by President Coolidge, and confirmed by

the Senate, as a commissioner of the District of Columbia. As Procter once said, that was so long ago that almost everyone has forgotten it, and those who remember have forgiven him. He is still active as a consulting engineer and is on the executive committee of the Washington Society of the M.I.T. He is a past president of the University Club and is chairman of its committee on literature, art, and decorations. It seems to us as if this should be honor enough for one man.

Benjamin A. Howes is an architectural engineer for the F.P.H.A. (Funny People Have Acorns, according to some) but actually the Federal Public Housing Authority under the National Housing Agency. He is trying to build prefabricated, demountable houses, using as little material as possible but adding as much humor as is necessary, which, Ben says, is quite a lot. He and Mrs. Howes are active members of the Georgetown Citizens Association. Their son (M.I.T. '39) is with the Pratt and Whitney Company, airplane engine builders in Hartford, Conn.—Henry M. Loomis is a professor of the canning industry, or to be more exact, is assistant secretary of the National Canners' Association.

Frederick A. Hunnewell, a commander formerly with the Coast Guard, was a naval constructor in charge of designing ships for its use. Writing from Cocoa, Fla., where he and his wife are spending the winter, he states that he is connected with the National Inventors Council of the Department of Commerce as a staff consultant. The chairman of this council has been Dr. Kettering of the General Motors Company's research organization. Its members have comprised outstanding inventors and engineering executives, all of whom served during the war to evaluate ideas and inventions from people everywhere. The staff has looked up some 250,000 items in the last five years, and the council has passed thousands on to the Army and Navy for consideration by their specialists. Fred writes: "Altogether, it has been a decidedly interesting undertaking with results thoroughly worth while, and I personally believe a similar agency in peacetime could aid in transforming creative ideas, wherever found, into effective employment. An expansion of the scheme into an Office of Industrial Technology, or some such title, is now talked about, and I hope that it will materialize at an early date. During these many months talks and correspondence with scores of inventors have been a keen satisfaction and generate a feeling that no one has an adequate conception of the vast reservoirs of worth-while ideas dammed up behind the ingenuity of the American people. In carrying on our work, I have stood on the edge of our patent system and, speaking as a mere layman, I hope that some process will be found to release this flood of ideas to the advantage of all concerned. As to Florida, I can only report that it always comes up to expectations for a winter sojourn, be the person active or retired, and this particular Indian River section seems to suit Mrs. Hunnewell and me to a T." Mrs. Hunnewell is probably kept busy shooing the mermaids away from Fred. An item of interest, perhaps, to those religiously inclined is that all these four men attend the Unitarian

Church, at least in a ratio of $3\frac{1}{2}$ to $\frac{1}{2}$, the half referring possibly to Howes, who has lapsed somewhat of late, though born a Unitarian.

Wilfred Bancroft, in a very entertaining letter, states that last June he resigned as treasurer of the Monotype Company in order to give his young associates the opportunity and pleasure of paying higher income taxes. He is not wholly out of the running, however, since, as the sole survivor of the executive group that put the Monotype Company on a paying basis (not having missed a quarterly dividend since 1916) he was given the newly created position of "comptroller." Wilfred questions the company's needing a comptroller any more than a cat needs two tails, but as he says he controls when he works, where he works, and how much he works, we think that a good time should be had by all, particularly Wilfred. He is very enthusiastic about the coming 50th anniversary of the Class in 1947 and hopes that a fitting observance of this outstanding event can be arranged. He ventures the hope that we can plan for at least one night of getting together away from the maddening crowd, where we can really see something of one another without any distractions. In ending his letter, he gives the toast, "Well, here's to seeing you and all the rest of our enduring young Class at our 50th. Way down. Way up. No heel taps."

William C. Potter, III, in a very welcome letter informs us that on January 16 he retired from active business after 49 years of strenuous business life. For 24 years he was occupied in mining engineering work, and for the succeeding 25 he was a Wall Street banker. For a number of years he was chairman of the board of the Guaranty Trust Company of New York City, and later, head of the executive committee. He writes that he hopes that our 50th anniversary celebration will be held in or near Boston. — Harry Pugh is still carrying on the A. H. Pugh Printing Company in Cincinnati. He is a director of the Cincinnati Post of the Army Ordnance Association, with which he has been connected since World War I. He holds a commission as colonel. He is much interested in solving higher geometrical problems — can you imagine any of the rest of us being able to solve, at this late date, even the most simple of plane geometry problems? He has developed both an algebraical and a geometrical direct proof of the theorem that if the bisectors of the angles at the base of a triangle are equal in length, the triangle is isosceles. He states that some Tech men are still working on this problem. Your Secretary is sure that we will all take Harry's word that the triangle *is* isosceles. We give fair warning to Harry that when he comes to the 50th he must leave his geometry and his compasses in Cincinnati.

Harry Worcester retired in October as vice-president of the United Fruit Company. He has an office at 60 State Street, Boston, and states that he finds enough to keep him about as busy as he ever was, the only difference being that no one pays him a salary. Some difference, we should say. Relative to class participation in the Alumni Fund for last year, Harry says the record shows, that, as of December 31, we had reached 79 per cent of our quota in number of subscribers and 127 per cent of our quota

in dollars. This is a very creditable record, we should say. — JOHN A. COLLINS, JR., Secretary, 20 Quincy Street, Lawrence, Mass.

1898

Mrs. Blanchard and I had a pretty comfortable trip across the country by motor, arriving on December 14 at our daughter's home in San Gabriel in Greater Los Angeles. We had a wonderful Christmas reunion there with her husband and two children and our son Malcolm, his wife, and two children. Later we spent a week as guests of Malcolm at the officers' club at Camp Haan near Riverside. Malcolm (M.I.T. '36) is a captain in the Transportation Corps; at present his job is receiving soldiers back from the Pacific and facilitating their return home. He had his wife and children down from Berkeley to stay at the officers' club for that same week, giving us an opportunity to get acquainted with our grandchildren, whom we were seeing for the first time.

I am writing from Soboba Hot Springs near the town of San Jacinto in the "Ramona country," where we are spending a fortnight. So far we have not found much of anything in southern California except our children to make us want to settle here for the rest of our lives, and we have two children with their homes in the East. Soon after our arrival, we took a trip down to Laguna Beach to see Elizabeth Passano, who lives there with her daughter and granddaughter. Professor Passano moved out here after his retirement and enjoyed a few years at Laguna before his death.

We have seen a good deal of Louis and Martha Slichter, who have been quite intimate with our daughter Helen. Louis was professor of geophysics at the Institute before being called into full-time war work. His headquarters have lately been at Cal Tech in Pasadena. Having now finished his war activities, he departed a few days ago for Boston to clean up his affairs there before taking a professorship at Wisconsin.

Helen's house is only a few miles from Paul Johnson. We have seen him several times, but were very sorry to find him confined to his bed, which is most irksome to one of his active disposition. We hope, however, that he will be up and around before long.

On January 30 we braved the traffic to drive through downtown Los Angeles to see Frank Coombs and his wife at 2375 Scarff Street. His home is in a quiet, tree-shaded side street opposite a little park, quite an oasis in the middle of the bustling city. Frank had been busy during the war working at the Douglas Aircraft factory at Long Beach, but since shortly after V-J Day he has again been a man of leisure. He reminded us that he was four years older than the average of our Class, since he had had to work four years before he was able to enter Technology. He recalled with gratitude how helpful Harry Tyler '84 had been to him in getting adjusted at the Institute. We remember Frank as a leading spirit in our Class and as a dominant voice in the musical groups, and we cannot recall that we ever had a thought that he was older than the rest of us.

I found a letter waiting at San Gabriel asking me to write an article on the metal carbonyls for the "Encyclopaedia Britannica." With the help of the library at Cal

Tech, I was more than glad to do this. Also waiting for me was a forwarded letter from Edgar Weimer, who again wanted addresses of all members of the Class. Again it was too late to comply in time for Christmas greetings; so I returned his dollar, telling him where at Technology he should apply. I have since had a note from Miss Peabody saying that his request has been filled direct. To quote from Edgar's letter: "I hope you are enjoying your old age as I am! On December 19 I shall be 71, and if it were not for my broken leg, hit by an automobile 10 years ago, I should feel 40. For the past 10 years I have been living in Harrisburg, Pa., where I have now bought a home and expect to spend the rest of my days. The natives have taken me in. I am now ending my fourth term as treasurer of the Harrisburg branch of the Pennsylvania Society of Professional Engineers. The city officials cannot see me take a rest. I have lately been appointed on a committee to review the new city building code. I was chairman of the state building code commission under three governors."

A letter from Dan Edgerly, bearing New Year's greetings, says: "I retired from business about two months ago. I plan to make my headquarters at the University Club of Chicago where, as a bachelor, I am just another specimen who lives at such places. When motor travel becomes more comfortable, I will some day say hello, especially as I have relatives at Stanford University. This winter I shall be in Mexico for a month." — Our globe-trotting classmate, George Cottle, has resumed his travels, now that the war is ended. He left Boston about December 1 for Rio and South America. He expects to be back home about February 1, and we can look forward to another of his famous travel talks.

In response to Ed Chapin's request for news, we have the following letter from Frank Colcord. Frank is vice-president and manager of metal sales for the United States Smelting Refining and Mining Company, Inc. His office is located at 57 Williams Street, New York. He writes: "I have Ed's note suggesting a letter from me describing some of my experiences in the copper industry. The copper industry parted with my services in 1920, probably much to their loss. In 1914, I became actively engaged in selling the nonferrous products of our company, and this has been my main interest to date. Incidentally, I have been the executive head of a nonferrous plant. My experience during the war years is parallel with that of almost everyone else — an attempt at all times to observe directives from the various governmental agencies. Sometimes, even with the aid of two lawyers, it was difficult to know what a directive meant. A sales organization during the war period seemed to management an almost unnecessary expense. We were simply order takers. Now management expects the sales department to get all the business in sight, regardless of whether or not there are strikes. We enjoy the change, nevertheless, as fighting for business is better than order taking. Lead is again almost a precious metal, and at some later time silver may become the mercurial metal it was in the past. There will be a worldwide market with almost daily changes

in its price. A sales department will then have to be good or get out."

A clipping from the New York *Herald Tribune* tells of the death of a well-remembered classmate: "Leon Alland, sixty-nine, retired civil engineer, died [on December 19] at his home, the Hotel Lombardy, 111 East Fifty-sixth Street. A native of Boston and a graduate of . . . Technology, Mr. Alland had lived in Paris for many years, returning here at the outbreak of the war. He served as a volunteer with the War Rationing Board. Surviving are his wife, the former Grace Rosenberg, of Philadelphia; two brothers, J. Morse Alland and Felix Alland, and two sisters, Mrs. Martha Sperber and Mrs. Sophie Wit, all of Boston." — Howard B. Collins may now be addressed as follows: United States Vanadium Corporation, Bishop, California. — ARTHUR A. BLANCHARD, *Secretary*, care of F. D. Cowles, 187 West Chestnut Avenue, San Gabriel, Calif.

1899

Notices of the recent retirement of several members of our Class bring sharply to mind the fact that we all are rapidly approaching the age when most of us will be obliged to slacken up wholly or in part in our professional activities.

Miles S. Sherrill, V, who retired a year or so ago, but still does some teaching in physical chemistry at the Institute, has written me on a letterhead which reads: "The Class of Andover 1895, Miles S. Sherrill, Secretary." But Miles was not the only one of our Class to be graduated from Andover in 1895; Ed Sheak and Hervey Skinner also did their prep-school work there and were present at their 50th reunion last May. Ed Sheak retired in May and has bought a small farm at Lyndonville, Vt.; he has modernized the house and is living there the year around. Fancy Ed Sheak a farmer! That will be worth a motor trip from Albany next summer just to see. All the same, Ed, I envy you that Green Mountain scenery. Harold Graves, IV, who thought he had retired several years ago, evidently found it too hard work to be idle and is back at work again on the new John Hancock Life Insurance Building, which is soon to be built in Park Square. Harold and Malcolm Corse went to school together in Medford before entering Technology.

Speaking of architects, George C. Glover has his office in Everett, Mass., but lives in Melrose Highlands, as he did while attending the Institute. He has about a half acre of land and does some farming on the side. Before the war George had a farm at Whitefield, N.H., but when hostilities started, he sold it and returned to Melrose. He is working on a plan for extensive alterations of the inn at Whitefield and on other hotel projects in the White Mountain region. George says it looks as if there were going to be a boom in building in that vacation resort section.

William A. Hazard, for 36 years in the erection division of the Bethlehem Steel Company, retired on January 1 and asks that all communications be sent to his home address: 510 High Street, Bethlehem, Pa. According to an article in the Bethlehem *Globe-Times* for December 8, a testimonial dinner was given to Bill Hazard and another executive in honor of their long

service with the corporation. — F. C. Waddell, during an automobile vacation trip last September, spent a profitable hour renewing old acquaintanceship with Newell, President of the Bath Iron Works. He barely missed seeing C. W. Brown at Rye, N.H., and your Secretary at Albany. Better luck next time. Waddell's address is 705 Fourth Avenue, Bethlehem, Pa.

Your Secretary regrets to announce the death of G. Manning Gale, IV, on October 11 and William L. Morris, VI, on December 8. No details are available. — BURR R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

1900

In answer to letters about the reunion, we heard from Nat Rand as follows: "How I should love to go to Cape Cod and join you and the boys at the 45th annual reunion! Perhaps I do not need to offer an alibi. You know the conditions — gas, transportation, tires, and distance. However, one particular appeal that made me hesitate somewhat before deciding to forgo this reunion, was that I met my wife at West Harwich, not far from Osterville, and for many years we had a summer cottage there. It was in the waters around Cape Cod that I learned to swim, fish, and sail. Thanks for your invitation to bring a covered bridge with me. As I cannot bring it with me, I am enclosing with this letter a small print from my collection. Since there is no writing on the back, you can use it for scrap paper. Give my regards to all. I am looking forward to the day when I can join you."

Alan Woodward from Birmingham wrote in during the summer as follows: "I should dearly love to have attended the class meeting in June, but to do so was absolutely out of the question. I haven't been on a passenger train since the war started, and when I was 65 years old they took me out of service, and I am no longer an active engineer, which I deeply regret. I know you fellows must have had a big time. I wish I could have been up there with you and caught one more of those nasty knee-high, inside-curve balls you used to pitch. I am taking the liberty of sending you a copy of the 1944 annual report of the Woodward Iron Company and also the Wheeling Steel Corporation's 25th annual report. My grandfather founded the old LaBelle Iron Works, which are a part of Wheeling Steel Corporation. My youngest boy is in India and has been flying the Hump since last October. The older boy is in Orlando, Fla., having been grounded because of bad eyes. He was the first man to enlist from the office here and has been in the Army nearly three years. Tell Charlie Smith, if he can use a fine engineer nearly 69 years old, to let me know." The news from Florida has it that Joe Draper is getting along in great style and picking up strength every day.

Upwards of a dozen cards drifted in during the holidays, and we thank you all. Bob Blair writes his usual good-natured letter, parts of which follow: "At the recent dinner in New York for President Compton, Mrs. Blair and I were the sole representatives of the Class of 1900. The balance of the table was occupied by representatives of 1902 and 1903. This table, by the way, was located exactly in front of

President Compton and only about 15 feet from him. There was a talk by General Groves, who was in top charge of the atomic bomb, and what he said was most interesting. Also, the moving pictures of the actual explosions of the bombs in New Mexico and at Nagasaki were in themselves more than worth while. I know exactly how these bombs work now and all the little points by which you can distinguish them from firecrackers. It is well to be versed in these matters. If one of these contraptions drops in my back yard, I can say with assurance, "That was an atomic bomb, and you, sir, must be Saint Peter." — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston 9, Mass.

1905

A midwinter meeting of the Class was held at Walker Memorial on January 21. Attending were Amberg, Ball, Barrier, Cowdrey, Danforth, Donald, Gilman, Hadley, Harvey, Shapira, Stevenson, Tower, and your Secretary. At a warm-up party in Pete Harvey's room at the Hotel Statler, Sid Strickland was present for a short while. It was unusual to have guests from afar at one of these informal gatherings, and Amberg, from New York, and Harvey, from Chicago, are to be commended for their efforts. Considerable interest was expressed in a 1946 reunion, and the committee of 1945 were rewarded (?) for their efforts of last year by reappointment for this year's reunion with full power to select the place. It was agreed that the week end of June 14 to 16 would be the most fitting. Harvey brought up the question of beginning early on a fund for our 50th anniversary (nine years hence), and an interesting discussion resulted in Harvey's being rewarded (??) for his foresight by being made chairman of a committee on this fund with authority to appoint his committee members.

Roy Lovejoy, in his letter regretting his inability to attend the meeting, writes of his war program: "I have read in the class notes from time to time the interesting bits about what some of our classmates have been doing for the war, and you may have read in the papers and magazines much about the development of radar at the Institute. You probably have also read about the ingenious devices developed for canceling the effect of the principle of radar so that our planes would not be so subject to accurate destructive fire — for example, how the aluminum foil that disappeared from the cigarette boxes was dropped from them in ribbons, and so on, as they were flying over Germany and Japan, with the result that the Germans could not locate such planes so successfully. The loss of planes was thus greatly reduced and thousands of boys in them escaped being shot down. Well, it was necessary to have equipment for cutting this foil. A company not far from us designed the machines for doing this work, and we manufactured for them, I expect, practically all the knives used in cutting up the material on those machines. We made quantities of them, and on top priority they were flown to the machinery builders and overseas, we understand, to get the equipment working. That is one of the things we did for the war, but of course, being subcontractors as we were in practically everything, we have not been men-

tioned in the newspapers as much as some of these other industries. I feel, however, that that little job alone was doing quite a bit for our boys and toward winning the war. About 90 per cent of our product, anyway, goes to very essential industries, and during the war nearly all of it. We were supplying practically our entire product to industries directly engaged in the war effort."

A note from Fred Pirie tells of the loss of his older son, Robert, 36 years old, at Iwo Jima. I am sure the sympathy of the entire Class goes out to Fritz and Mrs. Pirie in their great sorrow. Walter Bent and Mrs. Bent are due in the United States very soon, Walter having retired from Eastman Kodak after a long service, most of it in England. H. Hoffman Kennedy is planning to return to France to pick up threads and again operate his old business. Grove Marcy's daughter, Constance, is now private secretary to Senator Saltonstall in Washington, D.C. Roy Allen's new title is senior engineer with the engineering division of the Reconstruction Finance Corporation's Office of Defense Plants in New York. His home address is 153 East 18th Street, Apartment 18, New York 3, N.Y.

In an effort to locate Victor Paquet, who has dropped out of sight for a year or two, we canvassed all Seattle and Portland, Ore., classmates, with no results except to learn that Joe Daniels had recently had influenza and was recovering from a broken wrist and that Wallace MacBriar's oldest son is still in the Army at Walla Walla, Wash., his youngest son having recently obtained his discharge from the Army after four years, three of which were spent in Africa, Sicily, Italy, England, France, and Belgium. Wallace brags of five grandchildren and is apparently heading for the Grand Prize. Wallace is still with Carnation Milk, "contented" until he is "retired, fired, or grows long white whiskers."

This is interesting news. Frank S. Craver, who has been a petroleum engineer for years, with office at 504 Central Bank Building in Tulsa, Okla., specializing in petroleum explorations, has developed an instrument called a petrometer. It has been described in the *Oil Weekly* of January 14, on page 33 — the first time that a direct method of oil location has been given national and authoritative recognition, accorded only after a thorough examination of the method, which fully convinced the editors of its great merit and remarkable achievements. Frank's instrument opens a new era in methods of oil location, and any method making a record 300 per cent better than the seismograph at its best is certainly a big advance. Congratulations, Frank. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 71 Newbury Street, Boston 16, Mass.

1906

The subject which should be of most importance to readers is information about our 1946 reunion. Charlie Locke '96 has issued a notice that a special alumni observance on Saturday, June 8 at the Institute is now being planned along the lines of pre-war Alumni Days, with a symposium in the forenoon, an open-air luncheon, features in the afternoon, an Alumni Banquet at the Hotel Statler in the evening, and a

special program for the ladies. Advance notice was sent to the secretaries to permit class reunions to be scheduled accordingly. Your Secretary, therefore, goes on record as stating that the class reunion will extend from Wednesday evening, June 5, through Saturday morning, June 8. These dates should be reserved on your calendar. Five years ago, we celebrated the reunion at the Eastern Yacht Club, Marblehead, and those who attended agreed that it was an ideal site for such a celebration. The Eastern Yacht Club has been considered for this year's reunion, and, although we are not in a position to say definitely that the reunion will be held there, we think the chances are excellent that we may have the club privileges. In any event, reserve the dates, invite your wife, as the ladies will be welcome, get out your sea togs, polish up your golf clubs, and plan to come to the best class reunion ever. Further details will be forwarded as they become available.

Augustus S. Boynton, II, recently retired as director of vocational education for the State of Connecticut. The following clipping from the *Hartford Courant* of December 4 is of interest in this connection: "Retirement of Augustus S. Boynton, state director of vocational education, effective January 1, was announced Monday. An instructor in the first Connecticut trade school in New Britain, and a school director at Putnam and Meriden before his appointment to the State Department of vocational education in 1930, he has completed more than 35 years in State service. He was termed Monday 'a vigorous pioneer in the field of trade education,' by Dr. Finis E. Engleman, deputy state commissioner of education. Paying tribute to the retiring director, Dr. Engleman said, 'His able, sane and dignified leadership and long conscientious service has constituted a major factor in making Connecticut a foremost state in the field of vocational education.' A graduate of . . . Technology, Mr. Boynton lives at 291 Liberty Street, Meriden. He is married and has two daughters. He is a former president of the National Association of State Directors of Vocational Schools and has been active in work of the American Vocational Association."

Again we are indebted to Charlie Locke for an item of class news which reads as follows: "Clifford R. Wilsey, mining engineer of Denver, Colo., who has been with the United States Bureau of Mines since 1942, has terminated his work with the bureau and resumed private consulting practice. Before the war he was also western representative of the Sherwin F. Kelly Geophysical Services, Inc." — We are in receipt of a winter address for Abe Sherman, who can now be reached at the Four Seasons Apartments, Lido Beach, Sarasota, Fla. By the time you read this, Abe will probably be back in Fitchburg, but it is nice to know who the classmates are that are able to escape New England winters on Florida's sunny beaches. — Speaking of Florida, around the first of December we received a letter from Ray Philbrick, saying that he was leaving for Winter Park about January 15. Ray also wrote that one of his sons-in-law had been in Dayton for three and one-half years in the Technical Air Corps Command and was about to be released. — The Secretary received a Christmas card from George Hobson, who is still living in

Brookline since his retirement from the Army.

On January 17, Jack Norton wrote from Kalamazoo, Mich., that he had seen a reference to our reunion in *The Review* and that he intended to keep a promise which he had made to Ned Rowe at the last reunion to attend the next one. Jack had two sons in the service and states that both are now civilians. One of the boys was wounded but has entirely recovered. — Your reporter attended the winter convention of the American Institute of Electrical Engineers in New York during the week of January 21 and while there ran into Burton Kendall, who is with the Bell Telephone Laboratories, and Floid Fuller, who had run over from Bethlehem, Pa., to attend the annual A.I.E.E. smoker. Both classmates were told about the coming reunion, and the news seemed to be received most favorably. — The Secretary has a new address for E. T. Henius, V, who is now listed as dean of the Wahl Institute in Chicago.

News has been received of the death of two classmates; namely, Samuel E. Gideon, IV, who was a professor at the University of Texas (our records indicating that he had been at the University since 1913), on August 13; and Herbert D. McKibben, II, who resided at Ellicott City, Md., on March 5, 1945. — JAMES W. KIDDER, *Secretary*, Room 815, 50 Oliver Street, Boston 10, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

1907

The thoughtfulness of Hud Hastings saved me from having a batting average of about zero for notes in this Review. No responses had come to me from letters written to some of our fellows requesting information about themselves, and then from Hud came a clipping from the *Financial Post* of Toronto, Canada, of January 5, with the heading, "Many New Jobs in Portfolio of C. D. Howe," from which I quote: "Amalgamation of Munitions and Supply and the Department of Reconstruction into one department took effect as of January 1, 1946. Hon. Clarence D. Howe continues as minister of the new Department of Reconstruction and Supply. Chief functions of the new department are listed as follows: — To continue the purchasing of foodstuffs, clothing, and war supplies for the Departments of National Defense and for Allied Governments; to negotiate the use or purchase of government-controlled real estate by other government departments, provincial and municipal governments, and semi-public bodies; to continue priority assistance, particularly for veterans' housing; to continue temporarily, and eventually wind up, controls over timber, natural rubber, coal, motor vehicle distribution, and natural gas in southwestern Ontario (power control); to conclude the renegotiation of war contracts commenced by the Department of Munitions and Supply; to conclude the settlement of all war contracts terminated before completion; through the Forest Insects Control Board, to foster concerted action toward control of forest insect outbreaks; to provide for industry a technical and scientific information service; to review and make recommendations on all applications for double depreciation; to administer continuing arsenals through Canadian Ar-

senals, Limited; to wind up accounts and prepare final reports on the activities of the Department of Munitions and Supply; to sponsor the accumulation of a reserve of fully planned public works projects; to assist industry in converting from war to peacetime production; to control radioactive substances; to continue the building of veterans' homes through the Crown company, Wartime Housing Limited; to promote expansion of air transportation; continuing supervision over Canada's only synthetic rubber plant (Polymer) and her only developed source of atomic material (Eldorado Mining and Refining Co.)." It would seem that our eminent classmate might keep busy!

As of December 31, our class record in the 1945-1946 campaign for the Alumni Fund showed 114 contributors against a quota of 115, or 99 per cent, and gifts totaling \$3,242.25 with a quota of \$2,650, or 122 per cent. You men who receive *The Review* are the fellows who have made these figures possible. Thank you, as class agent, and as class secretary. Without doubt other gifts from '07 will swell our total before March 31, the end of the fund fiscal year. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WILSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

The second dinner and meeting of the 1945-1946 season was held at the University Club in Boston, Mass., on January 15. Eleven members attended — namely, George Freethy, Bill McAuliffe, Jeffs Beede, Linc Mayo, Sam Hatch, Myron Davis, Linc Soule, Harold Gurney, Joe Wattles, Stiles Kedy, and Nick Carter. Joe Wattles gave us two very interesting sound films: one, demonstrating the evacuation of the civilian population of Okinawa before the military went in and exterminated the Japs; the other, showing how the Faber Pencil Company sells its products. George Freethy told us of the recently announced engagement of his daughter, Virginia, to Captain Harry Francis Sprong. A February wedding is planned. The next class dinner and meeting will be held on March 12, and the usual notices will be sent out.

Greetings have been received from Roger Rice, from Los Banos, Calif., where, in his own words, he is "still keeping tabs on San Joaquin River diversions for our canal systems." — George Whittle has sent in a newsy letter from his home in Berkeley, Calif., in which he states that he has spent some 30 odd years on bridge construction work with the United States Public Roads Administration. During World War II, he worked on a large number of access roads to military establishments, forests, and mines; and now that the war is over, he is beginning a large program of metropolitan freeways in the West. He has a daughter who is a junior at the University of California. He reports that the M.I.T. Club of Northern California gathers weekly in San Francisco and usually has a good attendance. We were glad to hear from you, George.

We have the following changes of address to report: William E. Barton, 11 South Lake Avenue, Albany 3, N.Y.; Frank K. Belcher, 1524 A West Ring Street, Milwaukee 6, Wis.; Viggo E. Bird, Stanwick

Road, Cos Cob, Conn.; James T. Gallagher, United States Maritime Commission, 348 Baronne Street, New Orleans, La.; and Arthur L. Gardner, 132 West Chestnut Street, Wakefield, Mass. — H. L. CARTER, *Secretary*, 60 Batterymarch, Boston 10, Mass.

1909

From Paul: I was not able to attend the dinner of the Technology Club of New York on December 5. I'm sorry too, for the dinner was arranged to mark Dr. Compton's 15th anniversary as president of the Institute. One of the speakers was our classmate, Bradley Dewey, X, under whom I served in the Chemical Warfare Service in 1917 and 1918 and who is one of the most distinguished men in our Class. I asked Bradley if I might have him tell me about his speech. He sent me a copy of his manuscript, which dealt entirely with the accomplishments of Dr. Compton. As I read the manuscript, I was again reminded of my own conviction for these many years that we are most fortunate in our chief executive. Not so long ago Dr. Compton came to a class luncheon, and since it was my job to preside, I had a chance to see something of him and talk with him in a more personal way than has ever been my privilege. One thing impressed me then, and I think of it every time I hear Dr. Compton speaking. That is his physical fitness. You cannot help noting his magnificent physique as he stands up to speak. I always like to feel that he will still be fit and in good form when the rest of us are hoping the hour of adjournment is near. It is indeed a distinction to have great mental skills, but it is also a great comfort to every Technology man to know that our President has so much physical energy. That's one of the important reasons for his great success.

We were more than glad to receive a most interesting letter from Arthur Morrill, XI. He appears to have seen many places in the Far East that have been making headlines the past four years, besides a lot of the hinterland. His work of improving the health and sanitation of the country is most commendable; a great deal of this is needed in the eastern countries. The letter, from Detroit, Mich., runs as follows: "For two months I have been back in the United States, and just now I got around to reading carefully Carl Gram's letter of October 26 about the Alumni Fund drive. When you have been out of the country most of the time for four years, things surely do get behind, from the income tax returns to the clutter of stuff under the basement stairs. Since February I have been in China, and it is likely that I shall go back in a few weeks. I am still on wartime leave from the City of Detroit, with a reserve commission as sanitary engineer director in the United States Public Health Service and detailed through the State Department to the Chinese National Health Administration. We were working on plans for a better sewer system for Chungking when the sudden end of the war ruined the chances that the national government would pay the cost. When I left, the city administration was trying to work out a plan to go ahead with the work without government aid. The first of October, I went to Tientsin with the new city officials sent by the national government to take over from the Chinese

puppet administration that had been functioning under Japanese dominion. My job was to help in the taking over of the water and sewer systems, which have been having a tough time with inflation, finances, scarce materials, and everything else. They had been using a vegetable oil in oil switches, and some of the boxes were nearly full of charred oil. There were many things that needed fixing, and it looked like an interesting job, but I was called home suddenly just 10 days after I reached Tientsin.

"In January, 1944, I got back from two years in Burma, China, and India, most of the time attached to the Army and working on water supply. Then, in May, I left again and was five months in Ethiopia with a technical mission of the Foreign Economic Administration. That is an interesting country, with grand scenery, picturesque people, and an ideal climate, in spite of being close to the Equator. The Somali desert is scorching, but Addis Ababa is 8,000 feet above sea level. Then I went through Cairo and New Delhi to Kabul in Afghanistan for two months, to make a report for the Afghan Government on the possibility of draining a proposed new site for the capital city. If I had been given my pick of strange and interesting places to be sent, I don't think I could have done better than Ethiopia and Afghanistan. From Kabul, I went back to Delhi and Calcutta and then flew the Hump to Kunming and Chungking. For five months I lived in the family of a Chinese engineer, the Chungking commissioner of public works, and ate most of my food with chopsticks. He speaks English perfectly, but with guests, servants, ricksha men, and some of the men in the office I had plenty of occasion to polish up the Chinese that I had studied a few years after leaving Technology. Week ends I spent at the National Institute of Health, outside Chungking, where there is a swarm of dear little boys and girls, children of the staff members. They soon found out that I was easy meat as a source of supply for foreign postage stamps, United States and others. A few were collecting already, but a dozen or two more started when they found that I had lots of stamps. My brother Fred, '07, kept me supplied with cheap stamps and with little stamp booklets which cost only a nickel apiece in Cincinnati but were considered very fancy in Chungking. On one week end 36 children called at my room, with each of whom I tried to put on a simple conversation in Chinese. I'd often get stuck, as when they asked me the Chinese name of Afghanistan, but we got along.

"This is much too much, I see, for you to use in the class news, but when I get going on Ethiopia, Afghanistan, and China, there is no stopping me. You may be able to pick out a few items for what space you have available. Since most of the time it has not been possible to have periodicals sent to me abroad, I have seen little of The Review for four years. All my engineering journals have piled up here in Detroit, and I have a whole closetful that I ought to look over. When I go back, my address may be settled for a time long enough to have magazines sent. Now that the China Coast is open, it will be easier and quicker; but before the Japanese surrender such things had to go the long, slow way by

sea to Bombay or Calcutta and then be flown over the Hump. We got very good service on first-class mail, and I could get a letter to Detroit and back in a month. The above address [13563 Birwood Avenue, Detroit, Mich.] will always reach me, and I shall be here perhaps a month yet. I don't know yet where I shall go first when I get back to China. Give my regards to all the old-timers in the Class."

The Boston *Herald* of January 8 contained news items concerning two '09 men, Brad Dewey, X, and Ken May, VI. As stated in the February Review, Brad was elected to the Cambridge School Committee under the proportional representation plan. The following is part of an editorial: "The committee now includes Colonel Bradley Dewey, the industrialist who, as national rubber director, built the wartime synthetic plants. Dewey was stirred into running because the poor reputation of Cambridge schools was handicapping him in obtaining skilled executives for his chemical industry. Both the Dewey plants and the city can now expect better conditions." In The Review of May, 1943, Ken wrote that he had joined the War Finance Committee of the United States Treasury. The item in the *Herald* is as follows: "Whiting, Weeks & Stubbs announce that Kenneth S. May, formerly executive vice chairman of the Massachusetts War Finance Committee of the U. S. Treasury Department, is now associated with them. From 1918 to 1942, May was with the investment firm of Arthur Perry & Co., Incorporated, of which he was an officer and director at the time the United States entered the war. He served with the Treasury Department in Massachusetts on all eight war loan campaigns, and was executive vice chairman of this state from the fourth war loan through the victory loan drive."

Chet Dawes was down from Boston to grace a meeting of the American Institute of Electrical Engineers, and we asked him to save a luncheon date for us on January 26. We wanted to have a Dawes luncheon in his honor. As always, as far as I am concerned, it was an enjoyable affair. Some of the old stand-bys had conflicting dates. As it happened, Tom Desmond, I, was host at a luncheon at the Union League, just around the corner from the Technology Club; he had the Visiting Committee of the Department of Civil and Sanitary Engineering, of which committee he is chairman. Tom is quite the boy to get his name in the papers, too. For on the day before our luncheon, the *Times* carried an article headed, "Desmond Proposes Judicial Reforms" and outlining a four-point program. Mex Weill, II, drove down from Port Jervis with Helen. Mex lives in Tom's bailiwick, and he told us that his neighbors thought well of Tom. Molly Scharff, XI, had been in town recently and, although he could not be with us, there was a rumor afloat that the Scharffs hoped to return to New York, where Molly expected to open his office again. I, who know so well the hospitality of the Scharff home and the skill of Jeanne as hostess, hope the rumor will soon be confirmed. That will also bring back to New York my buddy, son Samuel, the Fried Clam Kid, recently returned from the Philippines. Chet Pope, X, and Marcia were leaving the very day of our party for South America by air on a two

months' business trip. Chet has already been commissioned to give the Class a résumé in another Review of his impressions south of the Equator.

Both Phil Chase, VI, and Delos Haynes, VI, missed the date of the luncheon by just a few days. Better luck in Philadelphia and in St. Louis next time! Carl Gram, X, sent his regrets with this priceless tidbit: "If it were during this week I could have made it, but Saturday is 'out' for us farmers, especially during lambing season!" (That exclamation point is mine, for can it be that Carl is not only class president and chemical engineer but now also managing director of the Gram Lying-in Hospital for Lancaster County Ewes?) Let King, IV, was scouring the Orange Mountains here in Jersey trailing an advertisement that may get a house for his daughter and the son-in-law. Let wrote, among other things, "Too many extracurricular activities these week ends." Someone may hoot at me, but these luncheons seem to mean more to me each year. I hope we can have another before summer. As at all our recent luncheons, we told each other anew that in Dr. Compton we were all sure we had the best college president extant! Here's the roster of the luncheon: Chet Dawes, VI, Mex Weill, II, Harold Ballard, I, Bob Hulsizer, VI, Larry Forrest, X, Reg Jones, VI, Bob Doane, VI, Dale Ellis, XIV, the Admiral, who is already planning a sailing party for next summer, Ed Howe, VI, Jim Critchett, XIV, Lewis Johnson, VI, your Secretary, V, and his guest, Lieutenant Vincent Stumpp '42, XVI, a two-striper just back from two years on a flat-top in the Atlantic. (Vince came to me in my role as honorary secretary back in 1938.)

In conclusion, let me add that there has been some discussion about a suggestion that we add to the Class Fund, which now amounts to about \$30,000. Reg Jones feels that by 1949 and our 40th reunion we should add materially to the fund. He has suggested a way to do this, and you'll be hearing about it as soon as the details are worked out. I, for one, am all for such an aim. Let's set our sights on a \$50,000 goal! — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary* Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 3860 Rodman Street Northwest, Washington 16, D.C.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1911

Yes, sirs, the die is cast! Our 35-year reunion, as you classmates learned from mid-January dues bills and publicity, will be held at one of the fine Cape Cod hotels — East Bay Lodge at Osterville, on the South Shore — Friday, Saturday, and Sunday, May 31, June 1 and 2. At this writing, just a week after the publicity went out, replies are coming at a good rate, and already 13 classmates, representing an attendance of 24 or 25, have signified "chances good"; 7, involving a total of 13, say "fair"; and 7 say "chances slight." Not a bad start! This year's reunion committee comprises the 10 members of the "100 per cent club" — attendance at all five reunions preceding this one — Marshall Comstock, VI, chairman; Obie Clark, II, George

Cummings, VI, O. W. Stewart, I, Harry Tisdale, V, Emmons Whitcomb, X, Den-
nie, and Jack, with two wives, Helen
Comstock and Grace Tisdale, in charge of
the ladies' entertainment. The first meeting
of the committee is scheduled for January
28, "O. W." having acted as a committee
of one in lining up the hotel accommoda-
tions. Offering to help in any way he could
on the preparations, Ken Faunce, VI,
wrote: "I believe I have around 100 feet of
movies of the 25th, if you care to use them."
Undoubtedly some of you have movies of
the 30th, as well; so be sure to bring them
along, and the committee will endeavour to
have 15-millimeter and 8-millimeter pro-
jectors on hand.

For the second successive year, the 1911
men in New York arranged a luncheon in
my honor, when I was over there attending
the annual convention of the National
Association of Retail Secretaries, coinci-
dental with the National Retail Dry Goods
Association convention and trade show at
the Hotel Pennsylvania. Unfortunately
Zeke Williams, XI, last year's host, was
away on a business trip in early January, but
Jim Campbell, I, headed the committee, as-
sisted by Phil Caldwell, I, Bob Morse, VI,
and Don Stevens, II. We had 14 present
on Tuesday noon, January 8, at the Tech-
nology Club of New York and had a most
enjoyable time. My own Course VI led
the field with six men present; I and II had
two each; III, V, XI, and XIII, one apiece.
Shortly before the "talkaround," follow-
ing a fine meal, Dick Gould's oldest boy
— Lieutenant Richard H. Gould, Jr.,
U.S.N.R. — appeared to greet the group.
He had just started his terminal leave and
is the proud wearer of 11 — that's right,
11 — battle stars! It developed that exactly
half the men present were grandfathers,
Walter Welch, VI, leading the field with
three grandchildren, although Walter mod-
estly admitted this included one set of
twins. For Walter, by the way, this was
his first day out after a hospital siege and
convalescent period. He had had to have
an abscessed lung removed, but said he was
beginning to feel fine. In addition to Camp-
bell, Caldwell, Gould, Morse, Stevens,
Welch, and the guest of honor, those pres-
ent included Charlie Edwards, XIII, now
with Pan American Airlines; Liv Ferris,
VI, with Bell Laboratories; Joe Harring-
ton, VI, with Standard Alcohol Company;
Frank Russell, real estate operator with
Horn and Burke; Selly Seligman, III, still
an importer for Seligman and Company;
Harry Tisdale, V, with American Dyewood
Company; and Dave Tuck, VI, with Holo-
phane Glass Company. Later in the after-
noon I drove out to Passaic with Don
Stevens, and our Class President took me
through the fine Okonite-Callender Cable
Company plant there, having last year
taken me through the company's Paterson
plant. Don, you know, is vice-president
and works manager. We then drove to
Don's home in Ridgewood, where I was
the overnight guest of Don and Lois. To
coin a phrase, it was all "just perfect."

The committee's solicitation campaign
brought to light the fact that Caleb Smith
Bragg, II, who resided at 299 Park Avenue
and had been associated with the Bendix
Aviation Corporation at Rockefeller Cen-
ter, had died on October 24, 1943. He had
never been active in class affairs, having

been with us for only a portion of our four
years at the Institute. — On the bright
side, it is fine to learn of the wedding in
Chicago on January 5 of Jack and Mabel
Herlihy's big son, John Ivers Herlihy, '39,
an Army captain, and Marie Lucille Han-
ley, daughter of Mrs. William Joseph Han-
ley of Chicago.

Literally a modern miracle has hap-
pened to one of our classmates — but let
Carl Richmond, I, tell the story: "Julius
Waldstein, I, was at the Manger Hotel in
Boston over the Christmas holidays, for
the wedding of a niece. He used his original
name while in Boston, although in Charle-
ston, W. Va., where he resides at 808½
East Kanawha Boulevard, he goes by the
name of Joseph Webb. Blind a year ago, he
now reads fine print without the aid of
glasses or any artificial help. Remember the
¾-inch-thick glasses he used to wear? It is
the result of a remarkable operation per-
formed on one eye and to be performed
(soon, he hopes) on the other eye. O. W.
Stewart entertained him at lunch one of
the days he was here, and J. W. told him
he plans to erect 50 dwellings in Charleston
during 1946. He is as uncouth and brilliant
as ever: he is a diamond, and a darned
rough one. Because of his eyes he has never
married — but now he can see, and now he
can walk on the street alone for the first
time in several years — and no glasses!
When I saw him in Washington a year ago,
I had to go to the station to get him, for
he was too blind to leave the station alone.
Now he sees better than I do." I repeat, a
miracle.

Quite a few more Christmas cards came
from classmates after the pre-Christmas
class notes were written, and I particularly
liked that world map showing the four
fine Stewart boys in their service uniforms
walking toward home from various points
in the Pacific theater; the darling snap of
Don and Lois Stevens' two-year-old grand-
daughter, Sandy (Lois Cassandra Stevens);
and Renée and George Forristall, with their
dog, Toughy, sketched as watching the
erection of the new Forristall home at 46
Wall Street, Wellesley Hills, Mass. —
ready for occupancy, they hope, in the
spring.

A fine letter from Bill Orchard, I, ex-
presses regret at having been unable to
attend the New York luncheon, as planned,
because on the previous night he had been
called to Florida by the serious illness of
his 87-year-old father, who died early in
the morning of January 10. Our sympathy
goes out to you in your great bereavement,
Bill. "I don't know any better way of
keeping you posted about my family than
to enclose a copy of our annual Christmas
card," he continues. "Mom and I say that
we have 14 youngsters — five of our own,
four in-laws and five grandchildren." With
an attractive cover, proclaiming beneath a
holly wreath and lighted candle, "They're
Home for Christmas!" the card reads: "The
first is back home from his job building
ships, the second is back from the air,/
The third will proclaim that the Navy is
best, while the fourth for the Wacs will
declare. /The fifth, home from college, will
roundly insist 'twas research that finished
the show, /While Mom and Dad listen,
with eyes dimmed by mist — for they're
all home for Christmas, you know. /

With uniforms hung in the closet with care,
safe after four years of war, /Grandchildren
and in-laws, all will be there, just as in
years gone before; /All thankful for vict'ries
that free men have wrought through vision
and courage and pain, /And hopeful that
war, through the lessons it's taught, will
ne'er dim a Christmas again. /Though
our loved ones are home and the war
has been won, God grant us the courage
to see /That even in vict'ry our task is
not done, if we would remain strong and
free. /For the war has been lost — unless
lasting peace can come to a prayerful world,
/Determined to live with our fellowmen
so that banners of war will stay furled.
— The Orchard Family, Maplewood,
N.J." Continuing, Bill writes: "Our three
sons — Jack, Bill, and Bob — on coming
out of war service have organized them-
selves into Orchard Brothers, Inc. They
bought the business of the Aluminum
Awning Company of Rutherford, N.J.,
are in business for themselves, and are
doing very well. — That's right — alu-
minum awnings that roll up like canvas
awnings, permanent, fireproof, a real item.
And it's a very promising business. I wish
I could have seen you earlier in the month,
and I hope that our paths will cross before
long. Awnings or no awnings, nothing
will put you in the shade!"

Have you read "Bow and Arrow Think-
ing in the Atomic Age" by George C.
Kenney, I, in the January *Cosmopolitan*?
It's George at his best, once more taking
up the cudgels for a unified command and
for the most part letting the cold statistics
speak for themselves. — My faithful cor-
respondent, Otilie Cushman, writes that
she and Paul, VI, are planning to attend
the reunion, and she adds that Paul was
elected to the Valparaiso (Ind.) Foreman's
Club in early January and that he is knee-
deep in Masonic work, being currently
sword-bearer in the commandery, steward
in the council, king in the chapter and as-
sociate patron in the Eastern Star — "in
other words he is in line in four of the five
Masonic groups here." — Up in Gardner
your Secretary continues as secretary-man-
ager of the Gardner Chamber of Com-
merce, while just before Christmas —
much to the delight of Stan and Julia
Hartshorn — their daughter, Barbara, a
lieutenant in the WAVES, began her terminal
leave after continuous Navy service since
September, 1942. Her future plans are un-
certain, Stan says. Meantime, her brother,
Stanford, Jr., a first-class seaman, has been
transferred from the radar school at Chi-
cago Pier to one at Dearborn, Mich.

The choice of East Bay Lodge at Oster-
ville, on the Cape, had one immediate fine
repercussion: it drew Eldred E. Besse, II,
out of his shell, for in remitting class dues
Cap wrote as follows from his home at 36
Washington Street, Fairhaven, Mass.: "I
got back home about 10 years ago, after
moving around the country in various
engineering jobs, and for that entire period
I have been, and still am, plant engineer at
Wamsutta Mills in New Bedford. My
summer cottage is only five or six miles
from Osterville, and I will certainly attend
the reunion and hope to see all the old-
timers. As I am now a grandpappy, it's
time I had a fling." Hooray!

From Rochester, N.Y., comes the reply

herewith from Clarence Dow, I, formerly from various New England points: "You spoke of Syd Alling, VI, being out here. Hesure is, and he and I play golf many times during the summer; this winter we are on the same bowling team, but I never knew he was M.I.T. '11. He is a very quiet sort of fellow, but I like him very much. I don't know Frank Taylor, VI, whom you also mention. By the way, I am Grandpa Dow to a second grandson as of January 5. They tell me that he looks like me — poor little fellow, what a handicap at the very start! Speaking of the reunion, as you did in your recent note — I'll be there or bust!" Clarence is a manufacturers' representative, notably for the Spencer Turbine Company of Hartford and Walter G. Legge Company, floor finishes, of New York.

A very nice letter, also, came from Joe French, IV, who is with Albert Kahn Associated Architects and Engineers, Inc., in Detroit. He promises to be at the reunion, either with his wife or with one of their daughters. "Three of our daughters are married," he writes, "and two still unmarried. My boy is 14 and a chip off the old block. Two grandchildren so far, a boy and a girl. My oldest girl was in the war as an Army nurse, and two sons-in-law were in service, one in the Army and one in the Navy. We had the whole family at home for Christmas — all safe and sound! We are very proud of the record of our firm in two wars and during the years between; our record in Russia of over 500 plants helped in a large way to give Russia its industrial strength to carry through this war. In the last war we had only 10 associates; a number we increased to 25 at the beginning of this war. We have lost four associates and all three of the Kahn brothers, which makes us realize our age. This year is my 32d with the firm, 28 of them as an associate. The future is very bright; right now we have about 400 employees and really need more. We are proud of your work for 1911, Dennie, and hope to see you this spring."

Dick Ranger's wife, Laura, sent in his dues and described the lieutenant colonel's chances of attending the reunion as slight, adding, "Dick is still in Germany, and I do not know when he will be back." So long until the Memorial Day week end! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1914

Again it is necessary to record regretfully the death of a 1914 man. Harold Warren of Swampscott, Mass., died on January 3. Warren was with us for only two years but was rather active in freshman affairs. During World War I, he served overseas with a field artillery unit. After leaving the Institute, he went with the United Shoe Machinery Corporation at Beverly and had been associated with them for over 30 years, engaged in research work. He is survived by a son who is serving with the Marine Corps and a daughter.

In a recent issue of these notes, it was reported that Colonel Lucian Burnham was back in the United States on the West Coast. A letter from Burnham, however, says that the new Pasadena address is a home he has acquired there but is not yet

personally occupying. He is still serving with the Marines in the occupation of the Marianas. — Earle Turner, who for years has been a professor of civil engineering at the University of New Brunswick at Fredericton, New Brunswick, during the Christmas holidays visited his old home at Harvard, Mass., where he met Harold Wilkins, who also maintains a gentleman farmer's establishment there. Turner said that in Canada the colleges were experiencing the same conditions, brought about by returning veterans, as in this country. Enrollments have increased far beyond their capacity, and at his institution it had become necessary to establish evening classes in order to accommodate the large number who had returned.

Frank Ahern has returned to his office in the new Interior Building at Washington, after having been stationed in Chicago for a number of weeks. Frank writes that his two sons are still in the service — the elder as assistant engineer officer on a destroyer in the far Pacific, and the younger still at the Great Lakes Training School in Chicago. — Word comes from Fred Karns that even with the ending of the war he is still stationed with the American Red Cross as assistant director of supplies for the eastern area. The office is at Alexandria, Va., and he is very eager to see any 1914 men passing through the Washington region. — George Perley's eldest son has been discharged from the Ordnance Corps of the Army after having served several years in England, France, and Germany. George himself is located in the New York office of Edwards and Company, manufacturers of signal equipment.

Another year of the Alumni Fund is drawing to a close. We have not quite met our quota this year. If you have not already sent in your contribution, please do so promptly. It should be recalled that these smaller annual contributions replace the large periodical drives formerly conducted for an endowment fund, gymnasium, and other special purposes. — H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

1915

This is *your* Class and is supported by paying your dues. If you haven't already sent in your check for the class dues, now is a very good time to do it.

Home from the wars! Virginia Thomas, overseas for one and one-half years as captain of an American Red Cross Clubmobile. I recently spent an evening with her and her mother, Barbara Thomas, and was fascinated with Virginia's account of her colorful and interesting experiences in England and Scotland and with the advance armies after D-Day through France and into Germany. Always an attractive girl, she wears her olive-green battle dress uniform covered with stripes, ribbons, and insignia, like a cover girl and really appears "on the sharp side!"

And then, the proud record of Jim Tobey, an Army colonel: "I am home from the wars after two years and eight months overseas, during which time I was in 16 different countries, participated in seven battle campaigns, and helped run the military government in Sicily, Italy, and Ger-

many. I arrived home as a Christmas present to my family on December 24. . . . After flying over North Africa early in May, 1943, I participated in the invasion of Sicily, went back to Africa as an instructor, returned to the mainland of Italy, fought typhus in Naples, and early in 1944 proceeded to England, where I was chief of the assignment division of the European Civil Affairs Division of the Army. We landed on the beach in Normandy shortly after D-Day. I was in the battle of the Bulge in the Ardennes, but not close enough to be in any great danger. The month of December, 1944, was spent in Paris at the Ecole de Gouvernement Militaire, followed by two months of duty with the French Army as chief of the United States Liaison Mission. Then into Germany I went in April, first to Karlsruhe in Baden, and finally Stuttgart in Württemberg. . . . For the past seven months I have been deputy military governor and chief of the interior of the Office of Military Government of Baden-Württemberg, with headquarters at Stuttgart. We lived luxuriously, as we should, and it was a pleasant assignment, although not without headaches. I traveled around a good bit, including trips to Lake Constance, the Austrian Tyrol, Berchtesgaden, Berlin, Munich, Frankfurt, Baden-Baden, Strasbourg, and many other places. I departed from Germany on December 4. . . . At Camp Kilmer on my way out, I saw a copy of the December Review, and read in it your notes, which were as interesting as usual. You have done a remarkably fine job, and I hope you will keep it up forever. . . . Next time you are in New York look me up. I haven't an office at present and don't know what I shall be doing, but our home is still here, with the family intact. My son is a lieutenant in the Navy. He was on an aircraft carrier in the Pacific and hopes to get out soon. They expect to present us with a grandchild in a few weeks. It's great to be an old duffer! I am now on three months' terminal leave, then revert to inactive status in the Reserves. The French gave me three decorations." And then in a later letter Colonel Jim says: "I was interested in Piza's account of the bomb in Hyde Park. It so happens that I was near by when it landed — in fact, I was uncomfortably close. . . . My son's wife presented me with a granddaughter on the second of January. . . . Jim's address is 840 Forest Avenue, Rye, N.Y. We shall be glad to see him again and hear his story."

At the Boston dinners of the Alumni Council, I have seen Vince Maconi, who loyally comes up from New Haven to represent the New Haven County Technology Club. — From New York, Charlie Williams writes: "My plans are somewhat indefinite. It seems like a swell time for the vacation we have been planning for several years; so Hope and I intend to drive to Florida in a week or two and stay until the last of February, when I'll come back and start looking for a job. . . . I enjoyed my work with New York City, but what made it a good one was working with a good crowd. It's going to be fun taking on something new." Good luck to Charlie and his quest for a new job. He surely has a fine background to recommend him. — In a recent Boston paper was a picture of Lieutenant Colonel Clive W. Lacy of New-

ton Center, Mass., receiving the Legion of Merit medal for his work in the office of the chief of the Chemical Warfare Service. None other than Major General Alden Waitt '14 is shown presenting the award.

You all can easily appreciate that under the energetic leadership of President Anderson the Technology Club of Philadelphia had the successful meeting which Herb tells about as follows: "Last night at the Bellevue-Stratford Hotel, Colonel Dewey and Dr. Compton excelled as usual. . . . The Technology Club of Philadelphia gives every indication of moving forward. An all-time record of 246 paid members has now been marked up, and at the dinner we had 199 guests. . . . I think that you will be interested in the new directory which our newly elected Secretary, Bob Harbeck '28, had printed for distribution at the meeting. . . . As usual the Class of 1915 had a worthy representation of its loyal members: H. W. Anderson, Forest J. Funk, Henry F. Daley, Greville Haslam, Kenneth T. King, H. E. Russell, Sol Schneider, Ed Whiting — eight men in all!" The other 1915 members are Lawrence H. Bailey, Stanford A. Guthrie, Charles W. Noyes, and Fred W. Stetson.

Let this letter from Mrs. Lloyd H. Chellman be an example to some of the other wives to write equally interestingly about themselves and their families. It certainly shows a fine spirit in everyone connected with 1915, although of course it could mean a slight touch of laziness on the part of some of the husbands. According to Alice Chellman, I must be about the only business man who did not have to go to Washington during the war, but I can see what I missed, between their southern and Swedish cooking. George Rooney saw a great deal of the Chellmans in Washington and vouches for everything Mrs. Chellman says herein: "I have just read the December Review and as usual enjoyed it no end. It's so good to hear about the different members of the Class. I was not acquainted with many of them in 1915 but have met many since. I was so disappointed that there was no reunion last year, but perhaps, now that the war is over, the Class can have a real get-together. Up-to-date news on the Chellman family: Our daughter Dot was graduated from the Boston School of Occupational Therapy in June and is now an occupational therapist at the Danvers State Hospital. Lloyd, Jr., arrived home from overseas on November 9 this year after two years of absence abroad. . . . Now that everyone else in the United States has business in Washington, how is it that we never see you here? Lloyd is busy trying to get rubber plants constructed, so that those who have cars will have tires to run on. . . . I've been busy in the Information Service, consisting of trained workers with desks in our United Service Organizations and Servicemen's Club, where the boys can go to get information about anything their little minds can think of. . . . At present our biggest job is finding rooms or homes to house the men who come to live in Washington. Look us up when you come this way, and partake of the hospitality of our humble home and our unusual Swedish customs. We can always roll out an extra cot, and we generally eat regularly. Ask George Rooney, he knows. . . . I took

this letter into my own hands — not so well done as Chell would do, but sooner. 'Help Azel,' I sez, so here I am. Best wishes and we'll be seeing you." Will the other wives of 1915 send in their letters? And will the 1915 men please send in their class dues and "help Azel"? — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline, Mass.

1916

Charles W. Fry, assistant superintendent of Essex Plants and Structures, was scheduled to be named superintendent to succeed Henry H. Berg, when Berg retired on pension January 1.

Ed Weissbach of Camden, N.J., sends on to us the following news from Spencer Hopkins: "Our oldest son, Philip, died on November 1, after a long illness. Alan, our second son, who was in Europe, was shipped direct to the Pacific to Nagoya, Japan. Marilyn is a freshman at Sweet Briar College, Lynchburg, Va., and is expected home for the Christmas holidays within a few days. Ethel and I have been well. It seems a long time since 1916; but it is a good life containing many pleasant memories and much to look forward to. I have been with General Motors since 1928. Now we have a 'strike,' as perhaps you know from the papers and radio. This is an unusual kind of strike. This time they want to take over the business."

Flipp Fleming writes as follows: "All three of us have just recovered from the flu and are making fast progress. Bill and his bride, Pat, are now living in Paris, Texas, where Bill is opening an electrical appliance shop. He was discharged from the Navy Air Corps, on November 30." (Young Bill Fleming called on us some three years ago when he was stationed at Lakehurst and was certainly a fine young chap.)

Bill Brown writes from Cleveland, Ohio: "You may say that, from the duties of a captain in the Naval Reserve, I have returned to civil life at my old billet as executive engineer in the Nela Park engineering division of the lamp department of General Electric. My daughter is still in the WAVES, as a junior grade lieutenant and at the moment is disbursing officer at the Wave separation center at the Great Lakes Naval Training Station, where they are very busy separating WAVES. My son, who at 17 years measures six feet four inches, is at Augusta Military Academy in Virginia. I myself am looking forward with more than enthusiasm to the reunion in June. Naturally, I shall be there. Anyone who wouldn't is not in his right mind." — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Berke-Moore Company, Inc., 11 Boylston Street, Brookline 46, Mass.

1917

Alvah Moody, a lieutenant colonel, landed in the Boston area shortly after New Year's and had luncheon with the several members of the Class who could be rounded up on short notice. Pieso had seen action in Africa, Sicily (where he was attached to the First Division), Sardinia, Corsica, France, and Germany. In charge of an anti-aircraft unit, at times he had some 800 men under his direction, and his responsibilities included keeping them in uni-

forms that would satisfy the late General Patton, as his superior officer. His daughter Marcia is now married and living in Colorado Springs. His daughter Eleanor expects to attend Colorado College in June; and his son Dick at last word was on Guam as a radar sergeant. — Stanley Dunning, late of Canada, has again come to Boston. He is still in the paint and pigment business.

We learn from the Newark, N.J., *Call* of December 16 that Edwin E. Aldrin may return to his pre-war job as manager of the Newark Airport upon his release from the Army. He is currently on duty at the De Shun General Hospital, Butler, Pa. Colonel Aldrin originally took over the management of the airport in February, 1941, with the request that the field be operated without political interference. Early in 1942, he was called to active duty in the Air Forces, but remained at the airport until late March as officer in charge of bomber shipments. He was commissioned a lieutenant in the Coast Artillery in 1917, a year later, switching to the aviation section of the Signal Corps. In 1928, he resigned with the rank of captain and in the intervening years has been active in the aeronautics industry.

Forrest P. Sherman, a vice admiral, was named deputy chief of naval operations for operations in December, an assignment in which he will continue his close wartime association with Fleet Admiral Chester Nimitz, now chief of naval operations. Admiral Sherman served as deputy chief of staff under Admiral Nimitz in the Pacific, but has recently been serving as commander of Carrier Division One, which includes the supercarriers, *Franklin D. Roosevelt* and *Midway*.

Ted Bernard's son, David, has recently been released from active duty as a junior grade lieutenant in the Naval Reserve and is reported to have joined the Dewey and Almy Company. Dave was graduated from Harvard in 1943 and served as first lieutenant on the submarine *Guitarro*, which was the first American ship to sight the Japanese fleet at the second Battle of the Philippines. During a year's operations in the Pacific, the *Guitarro* sank a heavy cruiser, a light cruiser, three destroyers, nine merchantmen, and two tankers. Lieutenant Bernard was awarded the Navy Bronze Star for his part in sinking the heavy cruiser.

Roger Putnam, former mayor of Springfield, Mass., and recently a lieutenant commander in the Naval Reserve, is reported to be a likely candidate for the nomination for lieutenant governor in the forthcoming Democratic primaries. Louis W. Perkins is a captain in the Coast Guard and is presently on duty as chief of staff of the 12th Naval District, San Francisco. A telephone call from Rudy Beaver, just as these notes are being written by the Assistant Secretary, indicates that Ray Stevens has recently been hospitalized for an operation, but is now back at the office and in good shape again. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

By way of the Alumni Fund and Bill Wills '18 I have the news of our old friend, Sam MacGregory, now known as Jock

MacGregor of the Mutual network, who writes as follows: "Maybe you are a radio listener, in which case you may have heard some of my shows on WOR-Mutual. But you probably wouldn't recognize, in the Jock MacGregor of the air waves, the Sam MacGregory who used to decorate (?) the halls and classrooms of the Institute many years ago. Well, let's call bygones bygones and start all over again — welcome the erring lamb back into the fold! Although I am afraid you wouldn't know me these days, as my lower face is covered with a lovely multicolored beard. It gives me that 'different' look, as well as freeing me from the hateful and never-ending task of daily shaving. And as a member of what is laughingly called the 'Entertainment World,' I can get away with it. Sorry, I'm not living up to my training by being an engineer, but directing radio programs is much more fun! And you meet such eccentric people!" Officially Sam is registered as Sherman A. MacGregor of Freeport, Long Island, N. Y.

On December 5, at the 15th Anniversary Dinner for President Compton in New York, the following were present: Pete Sanger, Mr. and Mrs. Armin Uebelacker (just back from Oak Ridge, Tenn.), Mr. and Mrs. Nat Krass, Mr. and Mrs. Charles Tavener and daughter, Mr. and Mrs. Sax Fletcher, Tom Brosnahan, Dan Starr, Bertram Jones (better known as Joney to his classmates), and your Secretary.

The following letter from our President, F. A. Magoun, came recently: "My ticket to the Alumni Banquet last June was purchased well ahead, and in my pocket. That was for a Saturday night. Thursday night I successfully delivered an address in the vicinity of Providence; by Friday morning my temperature was 103 degrees; and it was Labor Day before I did any work again, with the single exception of talking to the incoming freshmen on July 9." We are certainly sorry to hear that F.A. was ill and are mighty glad that all goes well now. "Now about the organ," he continues. "Professor Hudson, who is himself an organist as well as a consultant for the electric organ manufacturers, has twice recommended that we hold off until the fall of 1946 before considering any purchase. He advises against trying to buy one from the Army because he feels that the new instruments will be so much better than anything now available. He also believes — as who doesn't? — that we shall need more money than would have been necessary before the war. Edwin M. Newton, who heads his own company from behind a walnut desk on Devonshire Street, has made a magnificent contribution, swelling the available funds by an increase of 13.1 per cent, but we shall still need at least \$250 more before Harry Camp, our own class organist, can fool around trying to find the lost chord at the dedication exercises. There should be a committee on the selection, purchase, and presentation of our organ. Anyone having any suggestions, please speak up. Otherwise, presumably it will be the responsibility of the President to appoint such a body." Anyone having any suggestions may get in touch with F.A. at the Institute or drop me a line.

Your Secretary is joining with a friend in opening a boys' camp on Cape Cod this summer. It is to be called the Commodore's

Camp, with sailing as its main sport. If anyone interested will drop me a line, full particulars will be sent.

We are sorry to have to announce at this time the deaths of two classmates. Ernest T. Hickman passed away on January 14, 1945; and Donald B. Parkinson, an architect in Los Angeles, on November 17, 1945. At the time of the latter's death, someone whom I cannot thank as no name was given, very kindly sent me a page from a Los Angeles paper.

In addition to the regular Alumni Day, which this year falls on February 23, there is to be a special observance on June 8. Everyone should begin making plans to be present. — GRETCHEN A. PALMER, Secretary, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Our Class lost one of its outstanding men when Myles F. Connors passed away in Garden City, Long Island, on December 31. Myles was born in Washington, son of the late James J. and Margaret Connors. He married Elizabeth Milyard on November 17, 1920, and had a daughter, Helen Marie Schell, and two sons, Ensign Myles F., Jr., who is stationed in the Marshall Islands, and James M., age 13. During World War I, Myles was in the Tank Corps engaged on the design and construction of tanks. He spent from 1919 to 1924 in the United States Railroad Administration, Washington, D.C., as principal assistant engineer in the Department of Ways and Structures. He spent from 1925 until 1930 with L. F. Rothschild and Company, members of the New York Stock Exchange, in charge of the railroad securities department. From 1932 to date he was in business for himself as investment counselor. He handled the Princeton University investment account and also acted as counsel for Swarthmore College, the Institute for Advanced Study at Princeton, N.J., and the Ethical Culture Society. Myles studied civil engineering at the Institute and received his bachelor's degree in 1918. His hobbies were stamps, photography, and a workshop at home. He had been kept at home since April, 1944, with a rheumatic heart but continued to carry on his business there. The New York *Herald Tribune* carried an account of his career in the issue of January 2.

Laurence A. Gillett, regional director of the Federal Works Agency, for Region No. 4 covering Illinois, Indiana, Ohio, Wisconsin, Michigan, and Kentucky, is resigning his post to accept an important position with the Virginian Railway Company with offices in Norfolk, Va. This news was covered in the Haverhill, Mass., *Gazette* of December 16, which states that he had charge of the Federal Works projects in New England and further states that he was employed by the Virginian Railway after his graduation from Technology and that he will return to this railroad as assistant to the chief engineer.

The *Bell Laboratories Record*, Volume 23, issue No. 12, dated December, 1945, is a banner number for the Class of 1919, carrying news of three members on pages 482 and 503. Karl F. Rodgers was at the American Legion Post installation at the Hotel Van Rensselaer, New York, where more than 100 veterans of World Wars I and II were present for dinner. Fred Given, who is past

commander of this post, presented the past commander's medal to the retiring commander. P. W. Blye was photographed at a colleague's retirement dinner.

Verner B. McClurg has moved from Los Angeles to 4841 Del Monte Road, La Canada, Calif., and announces the architectural firm of McClurg and Hesse, established October 1, at 634 North Central Avenue, Glendale 3, Calif. Howard H. McClintic dropped your Secretary a line from 412 Keystone Building, Pittsburgh 22, Pa., to state that he is no longer located in Cleveland and sends his best regards. Roscoe H. Hysom has moved from Mount Desert, Maine, to 16 Heckle Street, Wellesley Hills 82, Mass. W. Roy Mackay drops a line to state that he is still at the same spot, assistant superintendent of the Rod and Wire Mills at Bethlehem Steel Company, Sparrows Point, Md. Roy would be pleased to see M.I.T. men of 1919 visiting in that section. Lawrence C. McCloskey is reported by his sister, Miss Agnes McCloskey, as having been promoted to the rank of commander. His mailing address is Naval Technical Jap, U.S.S. *Blackford*, F.P.O., San Francisco.

Harold W. McIntosh has changed his address from West Hartford, Conn., to 657 Beverly Road, Pittsburgh 16, Pa., and writes: "On November 15, I resigned from the Hartford Empire Company, Hartford, Conn., where I held the position of assistant manager of the furnace engineering division, to become associated with the American Window Glass Company, Pittsburgh, as assistant to the president. My oldest son, Flight Officer Harold, Jr., a navigator on a B-24 Bomber, was killed in March as result of a crash landing between Bermuda and the Azores. I have a daughter at Simmons College and a younger son in high school."

Evelyn Kitchin, Don's good wife, has written all the news of the Kitchin family. Don is studying Russian, using records and class work. Don, Jr., is back out of the Navy, after having served in the Navy Air Corps since March, 1941, and was a lieutenant commander when discharged. He is now at Tufts and expects to be graduated in mechanical engineering in June. Charles is in Japan with Company B, 380th Combat Engineers, having landed on September 1. He had been on Luzon with the 33d Division since July. It was interesting that he landed at a place near where Don's mother was a missionary 55 years ago — in the Kobe Girls School. Bob was married on September 15 at St. Simons, Ga., to Betty Buchanan. He will be out of the Navy soon and expects to finish at Harvard in a year and a half. He was a junior grade lieutenant in the Navy. Mrs. Kitchin has done over 500 hours of nurses' aide work. Don is still with the Simplex Wire and Cable Company.

En route from Boston to Buffalo in January, Al Richards wrote a long letter in which he says: "I saw Tubby Wales yesterday at the New England Sales Management Conference. He has promised to call you when he comes to New York in a few weeks." He adds: "As I am spending this next week in Buffalo and Chicago and am planning a trip South in February and March, I shan't be in Boston for the class exercises to be held the latter part of February." — EUGENE R. SMOLEY, Secretary, The

Lummas Company, 420 Lexington Avenue, New York, N.Y. ALAN G. RICHARDS, Assistant Secretary, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1920

Those of you who read the New York or Boston papers are already informed of the tragic death of Don Mitsch in the Eastern Airlines plane crash at Cheshire, Conn., on January 18. Don was a professor of civil engineering at the Institute and headed the Camp at Machias, Maine. He was deservedly popular with both the faculty and the students and was unusually active in alumni affairs. He had been attending an engineering meeting in New York and was on his way home when the accident occurred. He leaves a wife, Frances McFaul Mitsch, formerly of Machias, and two small children. His home was at 10 Magnolia Road, Milton. The sympathy of the entire Class goes out to his family, and his loss is sincerely mourned by us all.

A welcome letter from Chuck Reed mentions that his son, Edwin, was graduated from the last class of midshipmen at Columbia, was commissioned an ensign, and is now serving on an A.P.A. hauling troops in the Pacific. Chuck is serving his second year as president of the M.I.T. Association of Cleveland and helping to make it one of the most active of local associations. — Tony Anable, a lieutenant commander, has returned to his position as director of public relations and advertising for the Dorr Company of New York. As a navigating officer of an aircraft carrier, he participated in four major naval actions in support of the invasions of southern France, the Philippines, Iwo Jima, and Okinawa.

As port commander of the seventh Major Port, Austin D. Higgins heads the unit which is loading thousands of returning soldiers of General Krueger's Sixth Army at Nagoya, Japan. The Seventh Port, under Colonel Higgins' direction, formerly operated the military ports at Belfast, Glasgow, Hull, and Liverpool, where it handled the debarkation of more than a million men and the unloading of thousands of tons of vital supplies for the Battle of Germany. After V-E Day the first big shipments of veterans returning from the European theater of operations were loaded by the port on the *Queen Mary* and *Queen Elizabeth*. Last August, Austin preceded his unit to the Pacific. Originally scheduled to accompany the invasion forces, the unit was in mid-ocean when Japan capitulated and has now been assigned the operation of the ports at Nagoya and Kure.

Francis Sears, formerly Professor of Physics at the Institute, headed the physics branch of a delegation from Shrivenham American University in England which in December attended "American Week in Holland," a series of conferences with Dutch leaders. Ed Howard has left the Navy, in which he was a lieutenant commander, and is living in Lexington, Ill.; address, 201 South Cherry Street. Fraser Moffat has been promoted to the rank of colonel. His present address is 49 East 96th Street, New York. Winslow Wetherbee has left Albany and is now in San Francisco; address, 775 Brannan Street. — HAROLD BUGBEE, Secretary, 7 Dartmouth Street, Winchester, Mass.

1921

East Bay Lodge, Osterville, Mass., on the south shore of the Cape, June 9 and 10 following the second 1946 Alumni Day at Cambridge on June 8 — these are the details of our 25th reunion for you to jot down in the little black book. Famous as a favorite Tech reunion spot which Saint selected five years ago as the ideal location for our major reunion, Osterville bids fair to equal and surpass the excellent facilities we have enjoyed at previous gatherings of the clan. Swimming at a quiet, protected beach or in the surf at Wianno, golf courses at Wianno and the Oyster Harbors Club, tennis or fishing, boating, and other less strenuous activities for any who admit their age, plus horseshoes for Mel Jenney, who doesn't — these are but a few of the attractions to sandwich in at odd moments between the scheduled events on Dan Harvey's program, the ceremonies of the Parallelipedons, and the usual impromptu sessions led by Larry Conant, Paul Rutherford, Buck Buckner and the rest of the regular attenders. Don't miss this party. Appoint yourself a committee of one to get in touch with the fellows in your locality and help Dan spread the word. More details later in these columns and by mail.

Edmund G. Farrand, VI, President of the Technology Club of Chicago, sent a delightful letter describing the Club's activities with his promise to be present in June. Ed, who is secretary and general manager of the United Conveyor Corporation, has been chairman of the Chicago Honorary Secretaries for 12 years and one of the mainstays of the Chicago Alumni. John W. Barriger, XV, a director of the Chicago Club and manager of the Diesel locomotive engineering division of Fairbanks Morse and Company, also writes that he will be present.

Allen Addicks, X, breaks a long silence with a letter deploring the "ravages of peace" as unfolded by the postwar era to date. It's just a gag from this boxer of our undergraduate days, who continues: "I have been associated with the utility industry for many years, first as an industrial sales engineer, later as industrial editor of *Gas Age* and *Industrial Gas*. I was a captain in the Ordnance Department during the war, stationed in Washington. My present assignment is that of midwestern manager of the Robbins Publishing Company, Inc., publishers of *Gas Age*, and my office is at 859 Leader Building, Cleveland 14, Ohio, where I wish the boys who come to Cleveland would look me up. On July 1, 1944, I married Mary Margaret Patterson of Shelby, Mo." For the record, we should add that Allen hasn't lost his proficiency in the squared circle from reports that about 10 years ago, during a workout in the University of Pennsylvania gym, he accidentally landed a right on the jaw of a varsity team member with the desired result. Then Allen went down for the count when his victim mistook him for one of the boys and asked him to come out for the team. If Tom Proctor will also show up at the reunion, Dan can stage a bout to see what the captain of the 1921 Boxing Team can do in the heavyweight class.

Theodore A. McArn, II, also breaks a long silence with a letter to Saint, record-

ing that he has terminated his long residence in South Carolina. Now down on the Brandywine at Downingtown, Pa., he is with the Downingtown Manufacturing Company, building paper-mill machinery, including some of the largest machines of their type for producing wallboard. Ted says he was secretary of the Washington Society of the M.I.T. some years back but has lost contact with the fellows and will leave 100 East Lancaster Avenue long enough to attend the reunion.

Richard W. Smith, XII, formerly district engineer with the United States Bureau of Mines at Tuscaloosa, Ala., has been appointed assistant manager of the natural resources department of the United States Chamber of Commerce, Washington, D.C. Dick says: "I hate to leave Tuscaloosa particularly because I have shared offices with my classmate and chum at the Institute, James R. Cudworth, XII, director of the school of mines of the University of Alabama. You will be interested to know that Jim has lately been made associate dean of the college of engineering, and in June he will succeed Dean Davis, who is retiring. Jim is very popular and is on many committees, including the university council and the committee on research, of which he is chairman." Dick comes to his new work with a rich background. After graduation he was assistant geologist on the Tennessee Geological Survey and, in 1926, he obtained a masters degree from Cornell. He then joined the Georgia Geological Survey and became state geologist in 1933. In 1940, he was appointed mineral technologist with the United States Bureau of Mines and during the war was made district engineer in charge of the bureau's prospecting for war minerals in Alabama and Mississippi. Dick is a fellow of the Geological Society of America and a member of the American Institute of Mining and Metallurgical Engineers, the Society of Economic Geologists, the Southeastern Geological Society, and the Mississippi Geological Society.

Among those registered at the winter conventions of the American Institute of Electrical Engineers and the Institute of Radio Engineers in New York were: Philip T. Coffin, VI-A, Philip H. Hatch, VI, Lee J. Purnell, VI, John A. Scott, VI-A, Charles A. Williams, VI, Carole A. Clarke, VI, and Professors Jackson, Moreland, Tucker, and Timbie. Why don't some of these enterprising electricals stage an All-Technology meeting at the Technology Club of New York during next year's sessions?

Herbert V. Thaden, II, heads his own aircraft engineering organization, the Thaden Engineering Company of Roanoke, Va. With the Newark Airport open again, maybe Herb will stop over here in June and pick up some of the Jersey contingent.

David O. Woodbury, VI-A, raconteur and conductor of the three-year-old column in *Collier's*, captioned "Your Life Tomorrow," certifies his intention of bringing more Goopapa stories in June. Writing from his home at 9 Fieldcourt, Bronxville, N.Y., Dave says, in part: "I have just completed a book, 'Builders for Battle,' sponsored by the Navy and issued with co-operation of the Pacific Naval Air Base Contractors. To be published by E. P. Dutton and Company about May, it is the illustrated action story of the building of the naval air bases throughout the Pacific and

is the result of my 20,000 miles of travel via air, ship, foot, and dog sled. Last summer I journeyed 11,000 miles to Point Barrow, Alaska, by air to investigate the story of the naval 'Pet 4' project for obtaining oil. Meanwhile, I am engaged on a major book job for Westinghouse which is to be a full-dress war history."

Henry R. Kurth, VI, visited us in New York on his return to Boston from a western trip. He reports that Ambrose L. Kerrigan, VI, has discarded his silver oak leaves and returned to the Fitchburg (Mass.) Gas and Electric Company, where he has been promoted to the position of superintendent of operation for both gas and electric properties. Chick's eldest son, Malcolm, who was wounded twice in the European campaigns, has resumed his studies at the Institute. Malcolm was recently married to a Cambridge girl.

John J. Winn, Jr., X, formerly a lieutenant colonel in the Corps of Engineers, has returned to civilian life as an industrial analyst for the First National Bank of Portland, Ore. Jack started his war service in the Portland District Contracting Office and was later assigned to the European theater of operations as deputy chief of a supply division. He tersely says he lost 65 pounds getting ready for D-Day, got a Bronze Star with the rations, and after a spell in the hospital, found himself in the office of the Chief of Engineers in Washington.

S. Paul Johnston, II, author, aviation authority, and captain in the Naval Aircraft Service, reports: "I went back on active duty with the Navy as a lieutenant commander in 1944, after resigning as Washington manager for Curtiss-Wright. I was assigned to the Naval Air Transport Service and served as engineering officer, Squadron VR-10, N.A.S., Honolulu, until December, when I was assigned to the United States Strategic Bombing Survey as deputy director of the aircraft division. I was based in London from January, 1945, to September, 1945, and during this time made numerous trips to Germany, before and after the end of the war, investigating conditions in the German aircraft and light metals industries. I returned to Washington in September and then shipped to Japan, still with the Bombing Survey. I was housed in Tokyo until December and during that time traveled about in Japan, looking over what was left of the aircraft industry. I am back in Washington with my whole crew, finishing up our reports, which should run to about March, after which 'deponent sayeth naught.' I was raised to the rank of full commander in January, 1945, and was made captain on the December list. I was married on December 29 to Captain Cathryn Herron, W.A.C. Of my two children by my former marriage, Jim is in the Navy, swabbing decks and polishing brass on the U.S.S. *West Virginia* somewhere in the Pacific, and Mary Carol is a junior at Wellesley." Paul can be reached via the Cosmos Club, Washington, D.C.

Dr. Reginald H. Smithwick, III, for 17 years active in research, teaching, and the practice of general surgery, has been appointed professor of surgery and chairman of the department in the Boston University school of medicine, according to a clipping which Dennie Denison '11 sent via Saint. Simultaneously, it was announced that

Reg had been appointed surgeon-in-chief of the Massachusetts Memorial Hospitals. Reg is also associate surgeon at the Massachusetts General Hospital and instructor in surgery at Harvard Medical School. His original contributions on a variety of problems and his co-authorship of a text on the surgery of the nervous system have gained national recognition. After graduation, Reg received his M.D. from Harvard Medical School in 1925. He interned at Massachusetts General Hospital, later becoming resident in surgery there.

The month's new addresses are: Colonel Harold O. Bixby, II, Headquarters IX, Signal Corps, A.P.O. 309, San Francisco, Calif.; Tristram J. Campbell, II, Gray Gables, Old Orchard Beach, Maine; Lieutenant Colonel Joseph H. Carr, IV, Headquarters 15th Army, A.P.O. 408, New York, N.Y.; Roger Clapp, I, Box 1, Montague, Mass.; Robert B. Frost, X, 1215 Colley Avenue, Norfolk 7, Va.; Dr. William R. Hainsworth, V, Weaver and Cornell Streets, Scarsdale, N.Y.; Lieutenant Colonel Dugald C. Jackson, Jr., VI-A, 1038 Bridge Street, Philadelphia 24, Pa.; Perley B. Kimball, VI, 355 Pleasant Street, Rumford 16, R.I.; James LeGrand, I, Harley, Ellington and Day, 1507 Stroh Building, Detroit 26, Mich.; Howard F. MacMillin, II, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass.; Fred M. Rowell, II, Lincoln Street, Plymouth, Mass.; Hugh D. Seaver, IV, Alcazar Hotel, Cleveland Heights, Ohio; Lyall L. Stuart, IX-B, 2 East 93rd Street, New York, N.Y.

Have you any still photographs or motion pictures of previous reunions, of yourself, or of others in the Class which you will lend us to work into Bob Miller's photographic record to be shown in June? Please send them at once to your Assistant Secretary — with your news, of course! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Corporation, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

1922

Class President and Brigadier General Albert J. Browning has been very much in the limelight recently. He has been appointed by Secretary Wallace as director of the new Office of Domestic Commerce, in which capacity he will run the rubber, steel, and other commodity divisions as well as the units concerned with transportation, building, wholesale and retail trades. Browning is highly respected by business and begins his arduous new duties with the full support of businessmen.

Harold Berry of Gardner, Mass., vice-president and general manager of Florence Stove Company, has been elected a director of the First National Bank of Gardner. — Preston Robinson, X, chief engineer and director of research of Sprague Electric Company at North Adams, Mass., has been elected vice-president of the company. He is also a member of the board of directors. After getting his bachelor's and master's degrees at the Institute, Robinson went to the University of California, where he was granted his doctorate. He has been with Sprague since 1929. Preston and Mrs. Robinson live in Williamstown with their daughter. — Thomas Stubbs, III, gave up the mining profession in 1938 and is an

associate in the management engineering firm of Barish, Gayley, Long and Stubbs of Philadelphia. He recently moved from West Chester, Pa., to Moorestown, N.J., to take advantage of the fine educational facilities there for his children, John, aged nine, and Susan, aged five.

The Alumni Association has adopted the practice of appointing, in each class which is approaching its 25-year reunion, an individual to be a member of the special committee on 25-year class contributions. Bill Mueser has accepted this responsibility for our Class, and this serves as a reminder, not only that our 25-year reunion is rapidly approaching, but that the Class Scholarship Fund being raised to commemorate the 25-year reunion should receive prompt and hearty support. Your contribution can be sent to Bill Mueser or to Mr. Horace Ford at the Institute, earmarked for the 1922 Class Scholarship Fund. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

1923

Walter E. Richards, according to a recent notice of change of address, is at the Regional Hospital of the Santa Ana, Calif., Army Air Base. I understand that Colonel Richards expects to be released from the Army by the middle of 1946. I think the last time he was mentioned in these notes, in 1941, he was serving as a recruiting officer at Concord, N.H. Subsequently, he served as Air Corps resident representative at the General Electric River Works in West Lynn, Mass., and at the Curtis-Wright Corporation plant in Buffalo. In 1944, he served at the Las Vegas, Nev., Army Air Field, and in 1945 he was transferred to Buckley Field at Denver as commanding officer. — I recently reported that Jack W. Beretta, a lieutenant colonel, was chief of the physical damage division of the United States Strategic Bombing Survey in London. Jack has been informed that he has been awarded the Bronze Star for that work.

Jack Keck helps out with a number of items again this month. I had received an address change indicating that Miles Pennybacker had moved to Norwalk, Conn. According to Jack, he has moved both his business and family. The former, Voltarc Tubes, Inc., is located at 44 Cross Street in Norwalk, and his home is at Redding, Conn. — Oscar L. Perkins is with the Empire Company at Hartford. The company manufactures glass containers, and I understand that Perkins has something to do with the installation of certain glass container machinery. — Charles Roche is back in New Jersey from Oak Ridge, Tenn. He reports to the technical research department of the Air Reduction Company and lives at 850 Hamilton Street, Rahway, N.J. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

1924

Here's a bit of news in a letter from M. Nehemiah Waterman, forwarded by Chick Kane: "I have finished my wartime work

with the government in Washington and am taking a new position with Electrical Testing Laboratories, Inc., on January 15. The last six months have been pretty exciting. In June, I was 'detailed' from my job as assistant director of the building materials division of the War Production Board to a technical intelligence mission on building and construction which took me to London for two months with a third month in Germany. I flew back to Washington in late September and returned to my W.P.B. job, which changed on November 1 to that of assistant director of the construction division of the Civilian Production Administration. I saw a number of Tech men in London and Germany but am not good on names and classes. Now it's back to private industry with a wholesome respect for the problems of administrators in government service."

A clipping from *National Petroleum News* reads as follows: "After two years with the Petroleum Administration for War, E. O. Jones has rejoined Ethyl Corp. and will be a staff assistant to Julian J. Frey, general sales manager. Mr. Jones, who had been with Ethyl for 12 years, was serving as acting assistant manager of the Safety Department when he joined PAW in October, 1943 as a petroleum engineer." — From Dave Evans comes a note saying that Bill van Dusen is operating his own machine-shop business in Bridgeport, and that Dave Meeker is president of Hobart Manufacturing Company in Troy, Ohio.

Johnny Fitch is receiving congratulations on his new post as chief engineer of the Export-Import Bank, and Russ Ambach has returned to the petroleum industry with Atlantic Refining in Providence, following a wartime assignment as resident engineer for American Bosch at the Wright Aeronautical plant at Paterson, N.J. Russ visited the Secretary in Providence recently and reported that George Tapley, a major, has returned to Arlington, Va., from Alaska and the Aleutians. Russ also reported that Eric Brater, assistant chief engineer for the Cleveland Diesel division of General Motors, was in Japan on a mission for the Navy, and that George Fertig, recently released from the Army as a major, had promptly been elected secretary of the Southeastern M.I.T. Association in Birmingham.

Bill Robinson has already begun the preliminary planning for our 25th reunion in 1949 and desires to know the sentiment with regard to a delayed 20th reunion this spring. He would welcome hearing from you and can be addressed at Nela Park, Cleveland. — FRANCIS A. BARRETT, *General Secretary*, 234 Washington Street, Providence 3, R.I. GEORGE W. KNIGHT, *Assistant Secretary*, 36 Arden Road, Watertown 72, Mass.

1925

Since preparing the December notes last October, I have made a vacation trip back to Massachusetts, my first visit there since coming to Illinois in 1943. En route I called on our Class President, Tom Price, at his office at the Hammermill Paper Company plant in Erie, Pa., and after a pleasant chat of an hour or so, in which my wife was included, I left, with an invitation to visit his home on the return trip. A change in plans involving a visit to in-laws at the

Oak Ridge atomic bomb project prevented our stopping, but I hope to take advantage of his hospitality on a future trip.

Since my itinerary took me through Springfield, Mass., I seized the opportunity to straighten out our bank account at the Springfield Institution for Savings. After making a deposit of the surplus from our 1940 reunion and a withdrawal to cover excess expenses for that of 1945, I can report that our balance is \$100.59. This brings into sharp focus the fact that '25 has never had any plan for collecting class dues. Although I must admit that this omission makes the treasurer end of being secretary-treasurer easy from the book-keeping angle, it doesn't provide much in the line of liquid assets.

While in the vicinity of Boston, I called on Doc Foster at his home in South Braintree. We discussed the reunion of last June, at which I was unable to be present, and a number of other matters. During my stop at Oak Ridge I met but one Tech man — H. B. Kinsey '24, X-A. Kinsey was formerly superintendent of the Whiting, Ind., plant of Carbide and Carbon Chemicals Corporation, and occupies a similar position at Carbide's unit at Oak Ridge. I mention this because, since he was in the class just ahead of us, some of you may have known him at school.

In December, I received a circular from the Alumni Secretary, Professor Charles E. Locke '96, to the effect that it is now planned to have on Saturday, June 8, 1946, at M.I.T., a special alumni observance which will partake of the nature of pre-war Alumni Days, with symposium in the forenoon, grand open-air luncheon at noon, opportunities for social intercourse and other features in the afternoon, and Alumni Banquet at the Hotel Statler in the evening. Since no graduation exercises are to be held at the Institute at that time, there will be no student guests at the Alumni Banquet. A special program will probably be arranged for the ladies. Since our Class does not plan any function this year, I suggest that any of you who live near Boston, or can make the trip there, plan to attend as individuals. The notice states further that details will appear in *The Review*, so check there, and make your plans accordingly. If you do mean to attend, write or call Doc Foster at the Division of Industrial Cooperation at the Institute, and he will make arrangements for '25 men to be seated together.

From time to time, as secretary, I have the sad duty of reporting the deaths of classmates. The following clipping from the Washington, D.C., *Star* of November 3 reports the passing of Herbert R. Pierce on October 30: "Services for Lt. Col. Herbert R. Pierce, 45, who died at Walter Reed Hospital . . . as the result of an illness contracted in China, were held at the home of his mother, Mrs. Hattie Y. Pierce at Baileys Cross roads, Fairfax County, Virginia. [Colonel Pierce] was buried with military honors in Oakwood Cemetery, Falls Church, Virginia. Born in Washington, Col. Pierce graduated from McKinley High School in 1917 and from West Point in 1920. After serving at Camp Stotsenberg, in the Philippines, he resigned from the Army in 1923, and took a degree in Civil Engineering at . . . Technology. Col. Pierce spent 15 years as a civil engineer

in Central and South America, supervising construction of highways, railways, and pipelines. Prior to Pearl Harbor, he was associated with Army Engineers in construction of military defenses in the Canal Zone. Returning to active duty as a captain of field artillery, he served for two years in the China theater, winning the Bronze Star. Later he acted as combat liaison officer with the Chinese Combat Command and was awarded the special breast order of Yun Hui. He is survived by his widow, Mrs. Ouida Moore Pierce, of New York; two daughters, Oliva and Betty, and a son, Edward Pierce."

We are indebted to Du Pont's news service for the following announcement: "J. Frederic Walker has been appointed to head the new formaldehyde laboratory being established at the Perth Amboy, N.J., plant of the electrochemicals department of E. I. du Pont de Nemours and Company. Born at Perth Amboy, Dr. Walker attended high school there, being graduated in 1921. He was graduated from Technology in 1925, and in 1929 received the degree of Ph.D. there. After having been employed by Du Pont (the then R. and H. Chemical Company) during college vacations, he joined the company as a junior chemist in September, 1927. He was later advanced to senior chemist and, until his transfer to head the new laboratory, was a research chemist at the Niagara Falls plant of the electrochemicals department. Dr. Walker is the author of the first English-language book on the chemistry of formaldehyde. Published this year, it is No. 98 in the American Chemical Society's monograph series."

To the above release I can add a few personal details. First, we'll drop this "Dr." business, and call him Freddy, which is his usual form of address. Freddy is married to Lois Leffler, also formerly of Perth Amboy, and they have three children, Lois, Frederic, and Alan, in that order of seniority. (Pardon my industrial relations lingo.) I am not sure of the exact ages of the young Walkers, but I believe they are about 15, 13, and 8. If I've got this wrong, I'll hear from Freddy in the next mail after this appears. Although chemical research is Freddy's first love after his family, he has a number of hobbies. For example, while living in the vicinity of Niagara Falls, he became interested in the geology of the region, as well as various little-known features about the river and the falls. At one time he was, I believe, secretary of the Western New York branch of the American Chemical Society. In addition to the monograph referred to above, he has prepared papers which were read at both sectional and national meetings of the A. C. S. I am sure that Freddy and Lois will enjoy returning to their former home, even though the region is not so geologically fascinating as that around Niagara Falls.

Another clipping received contains a picture of James C. Evans, VI, and the accompanying caption states that he has been assistant civilian aide to the Secretary of War since November, 1943. He is on leave from his duties as administrative assistant to the president and director of trade and technical education at West Virginia State College at Institute, W. Va. He received the degree of A.B. from Roger

Williams University at Nashville, Tenn., in 1921, and in addition to his M.I.T. B.S., he won his M.S. in Electrical Engineering from Technology in 1926.

Professor Locke informs me that Edward B. Jennings, formerly a geologist with the Universal Exploration Company, has been promoted to the position of general superintendent of the General Exploration Company with offices at Jefferson City, Tenn. Ed is a graduate of Course III.

In connection with another matter (the Kurrelmeyer Fund), I have a note from Charlie Cooper, X, in which he says: "I'm at present director of the chemical engineering and metallurgy laboratory of the engineering department of the Du Pont Company, located at the Du Pont Experimental Station, Wilmington, Del."

Also at hand is a feature article from the Boston Sunday Post of October 14, describing the work of Mary Morrison Kennedy, IV. It is too lengthy to quote, but describes, among other things, her redecoration of the Oval Room at the Copley Plaza, in Boston and of the Sheraton Plaza at Daytona Beach, Fla., and her Georgian designs for the First Baptist Church and parish house in Worcester. It mentions her interest in modern *decor*, and her use of vivid colors where she feels that they meet the needs of the situation. She is consultant decorator for the Sheraton Corporation, which owns and operates 22 hotels. She first got into the decorating field a number of years ago when she won a competition sponsored by the Copley Plaza to select a decorator for the complete renovation of that hotel. She is the daughter of William L. Morrison, one of the best-known architects of his day.

Now that travel conditions are becoming easier, some of you may be traveling more. If any of you should chance to come to St. Louis, you can get in touch with me during business hours by calling Wood River 4-7311 (Western Cartridge Company), or at other times, Alton 3-6840. And in the meanwhile, any letters about yourself or other members of the Class will be welcome. — HOLLIS F. WARE, *General Secretary*, P.O. Box 52, Godfrey, Ill. F. LEROY FOSTER, *Assistant Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

1926

Our choicest item this month is a letter from our towering Class President, Dave Shepard, which gives us, out of a persistent London fog, a clearer view of his recent activities: "You asked for a lifting of what you call 'the haze of taciturnity' (this is the first time I have been accused of that) about my recent activities. Obviously, much has happened, but that circumstance only places my life in the same category with the lives of millions of others. Shortly after I last saw you, I found myself suddenly resigning from the Jersey company [Standard Oil Company of New Jersey] to take a job as petroleum attaché in the United States Embassy here. It was a fascinating task but an extremely hectic one. I consider myself very lucky to have had the experience of this position and to have lived through it. We had, of course, a great deal of work to do for the Army and Navy and were thrown closely in association with the corresponding governmental and industrial representatives on

the British side. My post involved an almost endless variety of problems about petroleum products, supplies, transportation, qualities, and applications. Not the least interesting aspect was the intelligence work on enemy oil activities and the work with many other interested bodies on what to do to make the enemy's oil problems worse.

"Late in 1943, the Jersey company approached the State Department and the Petroleum Administration for War (for which I was working, in addition to doing some jobs for the then Board of Economic Warfare, the War Shipping Administration, and the Lend-Lease Administration) and asked them to let me go back to the company because the company felt the need for an American to represent it in London. I do not know whether the State Department was glad to get rid of me or not, but at any rate it agreed to this request, and the company approached me to ask whether I would take on the job. Any delay in my reply was occasioned only because it took me a moment or so to catch my breath. I have consequently, since the beginning of 1944, been plunged into the middle of what for some time seemed to me a tremendously confusing hurricane of problems unfamiliar to me. The hurricane still seems to blow just as hard, but the unfamiliarity is now less confusing. I really have two hats: one as representative in the United Kingdom of Standard Oil Company (New Jersey) and the other as chairman of the Anglo-American Oil Company, Ltd., Jersey's wholly owned subsidiary in the United Kingdom. I am certainly pleased to have my family with me again. We are installed in a pleasant suburban house but are having to move to another one soon. To our great good fortune we have managed to get another house, and we are looking forward to it." — Dave indicates that he hopes to make one of his periodical trips to the States coincide with the week end of our reunion in June.

A second choice item is a letter from Bill Millar, which contains an admirable suggestion and sets an example which the Secretary hopes will be widely emulated. Bill, as you may or may not know, is one of our most persistently peripatetic classmates, and the Secretary is never quite sure whether he is in Africa, Iran, America, or Panama. The latter country is the origin of his recent letter, his specific address being Box 2039, Ancon, Canal Zone. Bill writes: "I always turn to the Class of '26 notes first, to see what goes on with the boys, and I expect many others do likewise. More classmates, including me, should drop you a line or two. I suggest we form an 'I'll-Write-At-Least-Once-a-Year Club' which would supply a check-up on everybody, besides making the Secretary's life a snap. So here's my contribution, which continues to be the record of a rolling-stone hunter. I'm in Panama this winter, investigating some of its nonmetallic mineral resources. Inquiring into the qualifications of two native miners, I was told that they had had extensive experience digging. 'Where?' I asked. 'Oh, into old Indian graves all over Coclé province,' they replied. So I hired them. Who knows what mineral wealth a couple of reformed grave robbers may turn up if given half a chance? They seemed pleased with getting a job.

One toasted the other, 'Salud,' and although it may have been my imagination, I think the other answered, 'Skol.'

"The whole of Panama is about as big as Maine, but there the similarity ends. No down-Easter would pay Mrs. Campbell 35 cents for a can of her soup, but that's what it costs in the interior, where I am now. There are compensations, however. I am buying in a supply of real silk stockings from Brazil and bottles of Chanel No. 5, and what with one or the other, or both in extremely difficult cases, I expect a great upswing in my social activities once I get back to the States. There are a number of unusual things to see in Panama, including a big ditch some fellows dug clean across the country. I watched the big battle wagon *Wisconsin* begin its 'north transit' through Miraflores locks the other day and was pleased to note that the boys had about a foot of clearance between hull and locks. It certainly would have been a mess trying to drag that thing out in case the hull had turned out to be a foot too wide. The *Wisconsin's* captain probably carries a rabbit's foot to ward off such emergencies. Right now one of the main topics of conversation here is whether Uncle Sam is going to build a sea-level canal across the isthmus. One of the arguments advanced in favor of the project is that such a canal would be less vulnerable to atomic bombing. Of course I haven't had any firsthand experience with the effects of atomic bombing — it seems that the people who have, don't talk — but I'll bet that even at sea level an atom bomb or two would be an awful discouragement to navigation.

"In Panama the dry season (January to May) is the time to travel by car. If you haven't gotten back from where you've gone when the dry season ends, it may be necessary to come home in a canoe. Which reminds me of the time I was riding horseback in the flat llanos country of Venezuela with Doc Whitehead '13 and Guillermo Zuloaga '30. In the midst of a very wide, hot, and dry section we came on a fellow building a rowboat out behind his adobe house. And there was an outboard motor fastened to the edge of an old corncrib. Asked where he planned to go boating, he replied, 'You remember the creek you crossed 12 kilometers back? Well, it will be over here next month when the rain starts.' That was really a hot country! I remember, one blistering day, how Whitehead, Zuloaga, and I got into an argument as to which of us was going to climb out of the saddle to knock a chip off an outcrop. It wound up as a draw — nobody got off — and to this day I'm wondering if that outcrop wasn't blue ground full of diamonds, or at the very least a pitchblende uranium ore. But I was telling you about Panama, not Venezuela. This will sound like a travelogue, however, if I don't wind up somewhere. So I'll do just that, with the hope that other long-silent classmates will join the aforementioned club."

A very formal card carries the announcement that Joseph Y. Houghton, for a decade with the patent section of the United States Department of Justice, has resigned to form with William F. Hall the firm of Hall and Houghton, American Building, Washington, D.C. The new firm will specialize in patents, trade-marks,

and cases of unfair competition. Joe is a member of the bar of the Supreme Court, and while at the Department of Justice his work consisted in representing the government in patent cases before the courts and in patent soliciting and interference matters before the Patent Office and United States courts. He reports three youngsters, all boys: James William, age 15; Joseph Gregg, 6; and Donald York, 4. Here is admirable evidence of how the student body at Technology continues to increase.

In January, for the first time in 20 years, Arthur Underwood visited the Institute, coming in the dual capacity of representative of the National Advisory Committee for Aeronautics and the General Motors Corporation. Arthur is with General Motors' research laboratories, where he has charge of special projects relating to Diesel engines, fuel injection, and so on. — Emerson Eddy, after war service as a captain in the Ordnance Department, has returned to the Texas Gulf Sulphur Company in New York City. — Also in New York now is Leo Teplow, who is with the National Association of Manufacturers. He was formerly in the industrial relations department of the Allis-Chalmers Manufacturing Company in Milwaukee. — Elliot Rexford has been transferred from the East Coast to the West Coast. He continues his work for the War Department and is making his home in Pasadena. — Winslow Russell is an equipment engineer with the Packard Motor Car Company in Toledo, Ohio.

Last fall, Alfred H. Dolben was elected president of the Massachusetts Real Estate Exchange. He is a partner in the firm of William H. Dolben and Sons of Boston. — At a November conference for dairy plant operators and milk distributors held in Burlington, Vt., under the sponsorship of the University of Vermont and the State Agricultural College, one of the papers presented was by William P. Hinckley, his subject being "High-Temperature Short-Time Pasteurization." — A news clipping gives further details of Natale Gada's new General Electric post: He has been appointed sales manager of emergency communication equipment in the transmitter division of the General Electric electronics department at Syracuse, N.Y.

The Spokane, Wash., *Chronicle* on December 17 carried the following report on our distinguished railroader: "Col. Robert E. Mattson, on leave since August, 1942, as assistant superintendent of the Idaho division of the Northern Pacific here, will return to Spokane next week and will take over his old job January 1, it was announced at the Northern Pacific's general offices in St. Paul today. Col. Mattson's first overseas assignment was in Iran with the Persian gulf command. He was decorated by the Russian government for his part in transporting vital war supplies to the Soviet union while serving with a railway operating battalion there. With the award, Order of the Fatherland, go free transportation on railways, steamships and tramways in Russia, an honorarium of 20 rubles (about \$2) a month for life, reduction of rent and tax exemption in Russia, according to information received at the N. P. general offices." — Now that Bob has the run of Russia, we wonder how often he will be able to use his prerogatives.

The Secretary regrets to report the death of Herbert J. Kaufmann on December 18 in New York. After receiving his master's degree from the Institute, Herb entered the employ of the Mutual Chemical Company of America and was with that firm until his death, formerly as manager of its Jersey City plant and more recently in Baltimore. He leaves a wife, a daughter, and a son.

The Secretary is happy to report that Chenery Salmon has agreed to be chairman of our 20th reunion committee. Pink is now actively at work making plans for this celebration, scheduled either for the week end of June 15 or for that of June 22. Final decision of the date and place will probably have been made by the time you read these notes. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

We were very glad to hear from two '27 men during the month. Joe Melhado has been more or less all over the place and wound up at 24 Rodney Road, Scarsdale, N.Y. Here is his description of how it all happened: "For the past three and a half years, since June, 1942, I've been down in Washington with the War Production Board (and for a few weeks with its successor agency, the Civilian Production Administration) in various jobs, which at one time or another included co-ordination of scheduling under W.P.B. production scheduling orders, co-operating in working out and administering the truck and bus tire distribution plan, editing a weekly report ('War Progress'), which was designed to keep top executives in the various war agencies informed of the progress of the war effort, organizing a system for keeping track of the flow of what we called 'critical common components,' preparing the weekly report which the operations vice-chairman presented to the production executive committee and the monthly report which the chairman presented to the board, various miscellaneous assignments as a member of the operations vice-chairman's staff, and some research projects as a member at other times of the Bureau of Program and Statistics. Altogether, a varied and educational experience, rather hectic while it lasted. In retrospect, I'm glad I had it, but in some of those spells of 16 hours of work a day for weeks on end, while the weeds were conquering my Victory Garden and my wife and children were scarcely aware I was living in the house, I used to wonder why I had ever left America to come to Washington.

"I was with Standard and Poor's (Standard Statistics), where I was in charge of the Trade and Securities Service, before going to Washington, but when V-J Day came along, bringing thoughts of a return to honest business, I was offered a job with Standard Brands, Inc., which interested me considerably more, and I began work at 595 Madison Avenue in the middle of December, after clearing up loose ends in Washington and turning my remaining assignments over to others. I'm on the staff of the comptroller of the parent company and shall assist him in various ways. I began by making a tour of a representative group of the company's plants — yeast, vinegar, alcohol and whisky, coffee

and tea, baking powder, gelatin and pudding desserts, cheese, margarine, tomato and other vegetable juices, malt, and so on. (Incidentally, at Owensboro, Ky., I had a very pleasant chat with another Tech man, Gerry Patitz '35, who is manager of the distillery there.) I have been following that up by getting acquainted with home office operations before actually knuckling down to work.

"I sold my house in Washington for almost enough to pay for the house I've bought in Scarsdale, and I've been getting reacquainted with my wife and youngsters (Joe, Jr., six and a half, who is aiming toward M.I.T. '61, and Jane, almost four). As soon as things settle down a little in the new job, I'm planning to renew acquaintance with some of the 1927 men I used to meet for lunch at the Technology Club, in the good old ante-bellum days. This is a long letter, but it's a long time since I've been in touch with the Class except for reading the notes in *The Review*. I'll be seeing you and the rest of the crowd at the Tech Club one of these days soon."

We had a letter from E. F. Patterson, who is now regional manager of the eastern district of the Great Lakes Steel Corporation. During the war he was plant manager for Stran Steel Division of Great Lakes Steel at Detroit. This company was responsible for part of the vast production of Quonset huts. At the end of the war, Pat received the above-referred-to New York assignment. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York, N.Y.

1928

It is with great regret and a sense of real personal loss that your Secretary announces the accidental death of Joe Parks. Joe was in Boston just two days before his death on December 15. He visited Bill Carlisle, who has been hospitalized at the Homburg Memorial Infirmary for several months, chatted with Jack Chamberlain, who is one of the doctors at the Infirmary, and called on Bill Kirk. The following Saturday, while hunting with his employer, he jumped out of a shooting blind and swung the butt of his gun at a fluttering bird. The impact exploded a remaining shell in the gun, and Joe was killed instantly. The Class extends its sympathy to Joe's wife, Margaret, and their two young children. Joe was always very active in class affairs, both undergraduate and alumni. He had a very wide circle of friends, and his passing leaves a real hole in our ranks. — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

1931

Two of the lawyers in the Class figure prominently in the recent news. Wyman P. Boynton is seeking the Republican nomination for county solicitor for Rockingham County in New Hampshire at the primary election next August. Wyman was a major with the Army Engineers during the war and has recently returned to civilian life. After graduation with our Class, he entered the University of Michigan law school in 1933, and was graduated in 1936. In 1932, he was elected to the state legislature, and after passing the New Hampshire bar examination, he entered the office of Judge Jeremy R. Waldron and later became the

junior member of the firm of Waldron and Boynton. Wyman was called to active service in December, 1940, and helped in the construction of the Alaska Highway, and later was transferred to the European theater of war, where he was attached to the Third Army. — Helge Holst, who received his law degree from Harvard Law School, has now joined the staff of Arthur D. Little, Inc., as assistant to Earl T. Stevenson, President. Helge was previously with the legal department of Lever Brothers and more recently was engaged in facilitating the transition, from laboratory to production, of research developments at the Radiation Laboratory, M.I.T.

Randy Binner has announced the formation of the firm of Hunter and Binner, engineer consultants, at 415 East Water Street, Elmira, N.Y. Randy was chief mechanical engineer of the Kellogg Corporation, in New York City, the process and design engineers for the atomic bomb plant at Oak Ridge, Tenn. The firm of Hunter and Binner has been set up as design and process engineers for the chemical, electrical, and mechanical industries. — William K. Bachli of the engineering section, capacitor division, of the General Electric Company in Pittsfield has been transferred to the manufacturing section of the engineering division, where he will be supervisor of manufacturing methods. He has been with G.E. since 1935. — Norman D. Fitzgerald, formerly director of the oil and gas division of the Great Lakes Carbon Corporation in New York City, has moved to Abilene, Texas. He is active there as an independent operator and consultant, doing geological work and drilling exploratory wells. — The Class of '31 wishes the best of luck to all these new ventures.

Beatrice Lurie, daughter of Mr. and Mrs. Benjamin Lurie of Malden, Mass., became the bride of Samuel Jacobson of Dorchester on December 16. After a southern wedding trip, the couple will live in Connecticut. — Elizabeth Soper of Gardner, Mass., was married to Frank L. McKnight, also of Gardner, at the Good Shepherd Episcopal Church in Springfield. The couple will make their home at 40 Comee Street, Gardner, upon returning from their wedding trip. Frank is president of the McKnight Machinery Company of Gardner.

Recently in Hartford, I was in touch with Maddy Cannon and was pleased to find him pretty much the same as when we were at school. Maddy has been with the Hartford Empire Company for the past 10 years, working on various problems connected with the glass industry, and is now in charge of research on the tempering of glass. He is married and lives in Hartford and has two children: a boy, six, and a girl, 14 months. — Bob Price has again rejoined the Package Machinery Company organization in Springfield, after being on leave of absence while with the Ordnance Department of the Army. Bob returned to Springfield about January 1.

As our 15-year reunion is coming up this year, it is interesting to note the announcement from Charlie Locke '96, Alumni Secretary, to the effect that on Saturday, June 8, there will be a special alumni observation at M.I.T. which will partake of the nature of pre-war Alumni Days with symposium in the forenoon, grand open-air luncheon at noon, opportunity for social

intercourse and other features in the afternoon, and Alumni Banquet at the Hotel Statler in the evening. I believe it would be desirable for us to combine our plans for the class reunion with this event. According to the announcement from Professor Locke, there will be more details of the June celebration in *The Review*, and through the mail. In the meantime, your Secretary will be very much pleased if he could receive some comments from members of the Class relative to our 15th reunion, suggesting places and dates which would be convenient. I hope to have plans for our reunion activities crystallized by the middle of April, and any co-operation or suggestions from you men would be greatly appreciated. — BENJAMIN W. STEVERMAN, *General Secretary*, 11 Orient Street, Winchester, Mass.

1934

A most interesting letter concerning Wu Wing Fong Lem has been sent in by a friend of his, Mrs. Reginald H. Runge of 424 Park Avenue, in Huntington, N.Y. It reads: "It occurred to my husband and me that you may not have had any news for some time from Wu Wing Fong Lem, who was graduated from Technology with a master's degree. Wing went back to China 10 years ago, in 1935 I believe, and the fortunes of war drove him steadily westward out of the path of the Japanese. He lived in Chungking for a time but several years ago went to Chengtu. There he lives with his sister 'Bobbie,' in a little three-room shack which he built himself and thatched with straw. He has a good position with the Bureau of Aeronautical Research in Chengtu. If all goes well, Wing and his Bureau hope to move, in the early summer of this year, to some place, as yet not determined, on the seacoast of China.

"His last letter, dated November 23, reached us on Christmas Eve, by air mail. It cost him \$170 to send half an ounce; so you see what inflation means there. He says, in part: 'The cost of living is at present at a level never attained before. The following prices will astonish you: coffee (a limited quantity available), \$8,000 a pound; tea, \$4,000 to \$6,000 a pound; eggs, \$70 to \$80 a piece; bread, \$300 a pound; meat, \$440 a pound; a very poor grade of cloth, \$1,500 a foot; an American watch (medium grade), \$180,000 to \$300,000; a newspaper (1 sheet), \$50; a small tube of Chinese toothpaste, \$1,500; a pair of silk stockings (fine), \$10,000; a pound of hard candy, \$1,200 to \$1,800; biscuit, \$800 to \$1,200 a pound; and so on. Cloth is the thing which has risen most in price. The average index of prices at present is about 4,000 times that of 1937 whereas the average salary has increased about 70 times. My monthly income, which is in the upper bracket, is around \$55,000, but this sum has very little purchasing power, as you will notice from the above prices. In terms of the black-market exchange rate, it is equivalent to about \$30 in United States currency. It hasn't the purchasing power, however, of 30 American dollars. And can you imagine it, the official exchange is still at 20 to 1, although I believe the Chinese Government subsidizes the rate, so that one actually gets \$500 for \$1.00, United States. The real, black-market rate is around \$1,700 to \$1.00.'

"The letter contained much more but this gives you a clear picture of the economic side of Wing's life. We send him a box each week, and he has asked for something we are unable to procure. Can you help us? He asks us to send him some copies of the *Journal of Aeronautical Sciences*, published by the National Advisory Committee for Aeronautics (Technical Report, Technical Notes, and Technical Memorandum). He says the latest he has is 1939. Kindly let me know how laymen like ourselves should go about getting these aircraft journals. My husband and I have been friends of Wing for 25 years, since we were all children together in school in Paterson, N.J. We have always been proud of his fine record and his high intelligence and feel that wherever Wing goes in China, there too goes a little chunk of America.

"For seven years during the Chinese-Japanese War we didn't hear a word from him, but since V-J Day we hear regularly. He says our letters to him always got through by way of India and the Hump. In fact, our air mail still goes that way, but our parcel post to him has been on the way four months. His address is: Wu Wing Fong Lem, P.O. Box 989, in care of Bureau of Aeronautical Research, Chengtu, Szechwan Province, China. He advises us to address him in Chinese, to be sure, inasmuch as Chengtu is about 100 miles from Chungking and native carriers do not read English when one leaves the area around Chungking. We are having blue prints made of his original Chinese symbols and will be glad to send one to anyone wishing to write him, for pasting on the letter."

We have word as to the activities of Herb Plass from his younger brother, whom we encountered on the train between Boston and New York. At Technology, Herb took the Course in Physics, but instead of following his training after graduation, he went to the Harvard Medical School and studied to be an M.D. During the war he served in the Army Medical Corps, doing special work on dysentery. He has recently received his discharge and is planning to start a practice in Waterloo, Iowa. — William Frederick Kopf, a lieutenant in the Naval Reserve, was married on July 26 to An Loeffler, daughter of Mr. and Mrs. Henry Loeffler of Long Beach, Calif.

"Your wandering Assistant Secretary, having returned from an extensive tour of Europe under the auspices of Uncle Sam's Army, is once again on the move. This time he is heading for his old stamping grounds in South America. October 31 saw him begin his terminal leave. . . . December 5 saw him attending the Doctor Compton dinner at the Biltmore in New York, where he was rather disappointed to find only three other members of the Class, Hank Humphreys, Marvin Silberman, and Andy Mooradian, at the class table. . . . January 16 found him on his way to Miami by train, there to start on the first lap of the air trip to Chile." — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicamata, Chile.

1935

Wartime conditions made a tenth reunion impossible, but there's no reason why we shouldn't catch up on our social life this

June. As these notes are written, a committee has not yet been formed, but by the time you read them we shall be under way. The sad state of this column is entirely the personal responsibility of the writer. He has received a great many communications, which will be dealt with as soon as possible. For this issue we can do no more than pass on some notes collected by our leading journalist, the present Editor of this magazine. Dud is probably as busy as I have been, and therefore he rates a big bouquet from us all. I'll take the raspberries. Here is the news he gathered.

Leo H. Dee was in Cambridge on December 6 and 7 and dropped into the Review Office. In 1942 he left the Philips organization to take the Navy's pre-radar course at Harvard, followed by the radar course at the Institute's Harbor Building. Upon completion of this course, he installed and maintained radar equipment and instructed crews in the maintenance and operation of radar equipment, in California and Hawaii. He was in the Pacific islands for about a year. He ended his service as a lieutenant commander and when seen was on terminal leave. He is eager to continue in radar, radio, and related activities. Dee said he had recently seen a number of Tech men. He mentioned Austin and Casey of '36, whom he had known through the Glee Club, as well as John A. Easton, Jr., '36, with whom he had taken the radar course at the Institute. Easton was a captain but has now returned to civilian life and is working for the Singer Sewing Machine Company. Ian MacFadyen is working in the laboratories of the Philips Company at Dobbs Ferry, and Otto Zwanzig is reported to be doing export engineering for the International Telephone and Telegraph Corporation at their Broad Street (New York) plant. Dee also mentioned he had seen Finlayson at the 15th anniversary dinner given in New York for Dr. Compton, but nothing more. Dee's address is 94 South Highland Avenue, Ossining, N. Y.

Lucius E. Packard has been out in Chicago as Midwest representative of the General Radio Company, and between November, 1943, and May, 1945, I saw him rather frequently. He has four youngsters and during the summer of 1944 maintained living quarters on his boat, which was anchored in Lake Michigan just outside Chicago's Loop. In April, 1945, he was taking an active part in Chicago's radio engineering activities. Recent word has it that he is planning to start a business of his own with H. H. Scott '30, to be known as the Technology Instrument Corporation with headquarters in Waltham. The change is taking place as this is being written, and we hope to have more details later.

During the winter technical meeting of the Institute of Radio Engineers in New York, James Parker was found to be on terminal leave from the Army. He has returned to the Columbia Broadcasting System to take up where he left off when Uncle Sam called. — Lewis B. Simon is now in business for himself, with Arthur N. Corner as his partner. The firm's name is Corner Simon Associates, and offices are at 15 Maiden Lane, New York 7, N.Y. As consultants to industry, the new firm is offering services for product development, styling and engineering, package design, and cost analysis.

Perry Ware and Bob Granberg have lately both expressed hope that our class notes might be somewhat more active than in the past. Vincent Mooney was in the Review Office for a short time during the early summer, at the beginning of his vacation. During November, Frank Marble was seen at Walker, while visiting the Placement Bureau in search of engineering talent for Pratt and Whitney in Hartford. A Christmas card from Henry Ogorzaly, of 1 New England Avenue, Summit, N.J., says little about himself but encloses a photo of "Jewel's biggest current problem, young John Clay Ogorzaly, born August 3."

Dud himself, since the first of May, has been back at the Institute, where The Review takes up his full time. He says he hasn't yet by any means caught up with the many changes which have occurred during his decade of absence. — WALTER H. STOCKMAYER, *Acting Secretary*, Room 6-227, M.I.T., Cambridge 39, Mass. DUDLEY A. WILLIAMS, *Assistant Secretary*, Room 6-127, M.I.T., Cambridge 39, Mass.

1936

Uppermost in our minds at this time are thoughts of our 10th reunion. By the time this appears in print, you will undoubtedly have received more information about the affair than I have at the moment. However, to remind those who may have mislaid the information sent them, let's briefly review the plans. Our reunion will co-operate with the special alumni observance on Saturday, June 8, at M.I.T. The program will be similar to that of pre-war Alumni Days, with symposium in the forenoon, a grand open-air luncheon at noon, opportunities for social intercourse and other features in the afternoon, and the Alumni Banquet at the Hotel Statler in the evening. Our Class will participate in all these activities. Special tables will be reserved for us at the Alumni Banquet, and because it is being held on a Saturday, we shall expect a good representation from those who can get away only for the week end. The luncheon will afford a good opportunity to meet the wives, and because other special events will be arranged for the women, the wives are definitely invited. Our Class has reserved for Saturday night a few rooms at a Boston hotel to be allocated to those who make the first reservations; hence, if you have not yet returned the reunion questionnaire, may we suggest that you do so at once? Also, it is on the basis of information from these returns that plans will be made for our Sunday program, if any. We look forward to seeing you on June 8!

Instead of saving up the news until the reunion, we're going to pass it right along to you just as fast as we get it. So here is this month's collection. A Christmas card from El Koontz carried an interesting message: "We have moved East again. There is, as yet, no solution to the housing problem; so we're camping with Mother and Dad. The Reliance office in New York is 2531 Graybar Building. Look us up on your next trip to town. Gordon Thomas, out of the Army, is in the same building with the Lummus Company. I had a letter from President Austin, who is job hunting. Any ideas for our 10th reunion?" By this time El has the plans for the reunion, and we can bet that he'll be there! — Another Christmas card was from Bernie Gordon,

who is at the Naval Air Station, Oakland, Calif. He writes: "I have been in the Navy since 1943, most of the time with the Naval Air Transport Service. I have been connected with all phases of air transport operation but for the most part handled facilities needed for support and am now on the staff of the commander of the Naval Air Transport Service, as facilities officer. I spent a few months in Florida on a secret research and development program for the amphibious forces and hope to be a civilian by spring. California is surely all it's cracked up to be." The chamber of commerce should pay us advertising rates for printing that last remark!

Jim Patterson is still connected with the New York office of the Linde Air Products Company. On a recent trip to Buffalo he lent me some correspondence he had received from Cesar Calderon and Laddie Reday. Here are excerpts from their letters — first, the one from Cesar, written last summer on the letterhead of Cesar A. Calderon, Inc., Engineers, Machinery and Supplies, San Juan, Puerto Rico; Cable Address Cecal: "... It is a pity that I had not known that you were near New York last year because I spent quite a bit of time there. I decided to go up to learn how to manufacture wire and nails in order to set up a plant down here. After four months of working like a Trojan at the Baltimore plant of Bethlehem, I returned full of plans and hopes, only to find that all previous promises of co-operation by the local office of the War Production Board were a lot of empty words and after six months of filling hundreds of forms had to give up the idea entirely. ... It is a lucky thing that I did not become involved in that because I should not now be doing what I am. Three months ago I finally realized my life's ambition — to own and operate a large manufacturing enterprise. Through a series of lucky breaks too long to put in this letter, I managed to purchase the largest ice-cream and bakery plant on the island. This business is right down my alley. Lots of refrigeration equipment at the plant, lots of selling and merchandising problems. All kinds of union trouble. In fact, at long last I have begun really to live. ... We have a new addition to the family in the form of a red-head boy, now eight months old and strong as an ox. I shall have to exercise and keep in shape in order to protect his mother and sister from that savage. ... When I was in New York, I saw plenty of Leon and Netty (Simons). They have two children. I also saw Nestor Sabi '37. ... He was recently married to a Puerto Rican girl and is at Columbia University, doing secret research work [By now we know what that project was]. ... The last I heard from Art (Peel) was from Leon. He told me that Art was at the head of a research department at General Motors. ... Cesar closes his letter with some reference to our all getting together for a reunion. How about making it at the Hotel Statler in Boston on June 8, 1946?

After the usual introductory formalities, Laddie Reday writes: "Old Reday came through the war unscathed. ... I did get a tiny, microscopic nick on my knee which I like to think was due to shrapnel, but actually was due to broken glass on which I was crawling in a small boat to duck three Zeros which were after us. Aside from

that and getting a Legion of Merit decoration, I distinguished myself mainly by blowing up a Hal-Scott engine in my face with a load of reinforcements aboard, necessitating their being delayed overnight on the landing craft. This episode gave me the dubious honor of delaying the war effort for one day while the attacking task force waited for the reinforcements to come up. What does the war cost, a half billion a day? At the moment I am on the flying bridge of a small Diesel freighter, rusty and slow, on my way from Manila to Sydney, Australia. She does a six-knot maximum, and the distance is about 4,000 miles; so you can see I shall have plenty of time to write letters. My crew is grumbling because I would not stop at Zamboanga for fresh food, but old Reday has become a bit of a martinet since he received his master mariner's papers, and takes no pushing around. Before this, I was the skipper of one of the command ships for General Eichelberger. . . . I am trying to get out of the Army and have 103 points, but there is a shortage of skippers. . . . I have a couple of offers for jobs out here, and am trying to make up a small trading company to operate in these islands. . . . I am being married in Australia when I get this ship down there. [This objective probably explains why Reday refused to put in at any ports along the way!] My prospective wife is reconciled to, or rather, enthusiastic about, a wandering life around the world. She has done some writing and expects to do more. I have done a bit myself, am finishing a book which I hope to get published, and have had some encouragement from the publisher, who has seen part of it. I sold an article to *Esquire* a month or so ago. I don't think it has been published yet, but don't see many copies. We expect to work a bit and then bolt for some new place. . . . I have seen few Technology men out here, but ran into Ken Herpers in Yokohama. He is in the Port Command as an assistant dock supervisor, or assistant harbor master, or something. He wants to get a ship. He has a Jerry Collona mustache. I met Jimmie Stewart in Sydney about a year and a half ago. He was a major then. . . . There is a Major Noonan out here of M.I.T. '38 [John Noonan]. . . . I read in the Army newspaper that there was to be a meeting of the Technology Club in Manila, but it occurred on my sailing day so I could not attend. Well, we can certainly look forward to the publication of Laddie's book!

Another of our Class who is in a far-away land is Bill Creasy. A news release dated Kunming, China, October 5, reads as follows: "Colonel William M. Creasy, deputy commander of Services of Supply in China, has been decorated with the Legion of Merit. . . . The period covered by the citation was the month of May, when Colonel Creasy was chief of the planning section in S.O.S. headquarters. In this capacity he directed the section in making plans for offensive operations in the field and co-ordinating S.O.S. work with major subordinate commands of Chinese and American forces." — Ford Boulware, a lieutenant colonel, has also seen foreign soil. The Army took him in January, 1941, from his job in Utah. He was at Fort Belvoir, Va., until June, 1942, going to Camp Edwards and sailing for Ireland in August with the 531st Engineer Shore Regiment of

the First Engineer Special (Amphibian) Brigade. The regiment trained for a month in Scotland and in the African invasion landed the First Division at Oran. Boulware had a battalion there and from then on. Again they landed the First Division at Gila in the Sicilian invasion, the 36th Division at Salerno, and the First Army on Utah Beach in Normandy. So he had his share of invasions. From Normandy on, they were designated as the 3053 Engineer Combat Battalion and were all over Europe. His terminal leave expired the middle of February.

In the vital statistics department, we are pleased to announce the marriage of Eleanor Mishel, graduated in 1942 from Pembroke College, to Robert Leventhal. — Ben Sharp, a junior grade lieutenant, is the father of a daughter, Susan Parker, born on October 8. Ben is on duty at the Bureau of Ordnance in Washington, D.C.

Although Mort Kanner's death occurred in 1943, it is only with the lifting of security restrictions on radar that the important work which he did with the Radiation Laboratory can be told. We are indebted to Lee A. du Bridge, director of the Radiation Laboratory, for the following information about Mort and his work: Morton Kanner was one of the youngest scientists invited to join the very select initial group of outstanding American physicists, enlisted late in 1940, to form and organize the Radiation Laboratory at Technology. It was really a coming home for him, for he had been an outstanding undergraduate at the Institute before taking his postgraduate work at Princeton. At the latter university he made original investigations in nuclear phenomena, including some important work on uranium fission, and received his doctorate in 1940, at the age of 25. Upon completion of his studies at Princeton, he joined the staff of the University of Illinois, where he conducted research in nuclear physics until called to Cambridge.

During the first year at the Radiation Laboratory, Dr. Kanner devoted his energies to the production of novel types of high powered modulators, used to energize microwave radar transmitters. His skillful and enthusiastic pioneering in the field laid the foundation upon which a great body of scientific and engineering detail was built to bring forth the efficient modulators which are now used throughout our military organizations. Early in 1942, Dr. Kanner was the fifth representative of the Radiation Laboratory sent overseas to exchange information on microwave radar with the British. He returned with the conviction that the problem of early warning of the approach of enemy bombers was of primary concern to the security of the United States. He embarked on the most thorough theoretical investigation of the problem, which had not been made until then, and pointed out a number of specifications for an ideal warning radar set, which had not been appreciated before. He also showed the inadequacy of the existing American warning sets and suggested possible cures for their troubles.

Dr. Kanner was a tireless worker. He spent long hours after his British visit with such colleagues as Luis W. Alvarez, I. I. Rabi, K. T. Bainbridge '25, J. A. Stratton '23, N. H. Frank, and many others at Radiation Laboratory, going over his charts

and impressing them with the gravity of the situation which he had the intuitive foresight to realize. Dr. Kanner's discussions helped inspire Alvarez with the thought that the problem of early warning might be solved by microwave radar plus an antenna much larger than any heretofore used on such frequency. Dr. du Bridge, the laboratory director, gave Alvarez permission to start work on such an antenna and appointed Dr. Kanner as project engineer of what is now the well-known and much publicized M.E.W. (Microwave Early Warning). From March, 1942, on, Dr. Kanner and such associates as Alvarez, Bob Watt, Mike Chaffee, Al Bagg '37, and others, worked on a development model M.E.W. In October, 1942, the experimental system operating on the roof of the Institute surpassed the fondest hopes of all the laboratory. What had been a controversial system was now a proven practical fact. It was then that Morton Kanner was confined to a hospital bed, but his spirit could not be downed. In spite of his illness, he continued to carry on his planning and designing with his colleagues by telephone and bedside conference.

In the very month of Kanner's death, June, 1943, the Army placed a production order on General Electric Company calling for an expenditure of approximately \$180,000,000 for a specified number of M.E.W.'s. The first M.E.W. (one of several pre-production models built by the Radiation Laboratory) was in action against the enemy early in 1944. Standing as a bulwark of defense against the approach of enemy planes and buzz bombs through fog, rain, and darkness along the entire western front from D-Day until V-E Day were M.E.W.'s, inspired by Morton Kanner, who, regrettably, never lived to see how much his equipment contributed to our victory in Europe. The product of his research and determination was recognized as one of the most indispensable early warning radar systems of the war. In addition, the extra long range and almost uncanny ability of the M.E.W. for distinguishing between closely grouped targets (commonly referred to as high resolution) enables this spectacular microwave set to perform a great many other tasks which no other radar can execute. — ANTON E. HITTL, *General Secretary*, 530 Norwood Avenue, Buffalo 13 N.Y.

1937

Alumni activities at the Institute should be taking an upward turn in the months ahead, and we should find that a trip back for one of the functions is a very satisfying experience. Last night the M.I.T. Club of Northern New Jersey held one of its monthly meetings, at which Professor Soderberg '20, of the Institute, gave a very interesting talk on the background and present-day development of the gas turbine and of jet propulsion. He also showed some slides of plans for an expansion of the Mechanical Engineering Department to use a laboratory built by the Navy during the war and to add to it to form the new gas turbine and jet propulsion lab. It will be centered around the Sloane Laboratory, which, if I recall correctly, is behind the Aeronautics Building. The meetings of the Club are now held at the Essex House in Newark, and I should like to see some of you fellows there sometime; last night I

saw none. Another alumni function to look forward to is the one to be held in June. Charlie Locke '96 writes that the day "... will partake of the nature of pre-war Alumni days, with symposium in the forenoon, grand open-air luncheon at noon, opportunities for social intercourse and other features in the afternoon, and Alumni Banquet at the Hotel Statler in the evening. Since this event will not tie in with any graduation exercises there will be no student guests at the Alumni Banquet. It is expected that a special program will be arranged for the ladies." Sounds good! The date? Saturday, June 8. Watch other sections of The Review for future releases.

We have a short note from Phil Dreissgacker, suggesting that we are guilty of a slight exaggeration in calling him a major. He was slated for one when a new directive limiting the number allowed in his branch was issued. Also, he and Ruth have been doing some moving about. The note was from Camp Robinson, Arkansas, and he expected to be moved to Fort Bliss in Texas by the time this is printed. Joe Keithley has been awarded the Distinguished Civilian Award, "for exceptional accomplishments in the development of highly successful naval mines; for his sincere devotion to duty and mature vision and foresight, tireless efforts and unusual enthusiasm." That sounds mighty good to me and shows that he has really been on the ball. He was with the Naval Ordnance Laboratory in Washington. Are you still there, Joe?

Yours truly has launched his own business and is available for engineering work in design, development, production, quality control, or any other phase of manufacturing. When the powers above us at Atlantic Diesel decided that the company was to be no more (adhesive plaster and metal parts manufacture are not too closely related), I decided that the time had come to start my own, so here goes. I am also planning to market a few specialty items for popular consumption; you may be buying some without knowing it.

Lincoln Herzeca and Mlle. Josette Dorsy of Paris are engaged. Lincoln is now on terminal leave as a captain after serving three and a half years in the Pacific and European theaters of operation. Bob Thorson, also on terminal leave as a major, has returned to his business, the Thor Roofing Company in Medford, Mass. As Bob has been carrying on the business *in absentia* for the last four years, it must be nice to see it once in a while, to say nothing of his family and friends.

Some new addresses and connections: Norm Birch is now with American Brake Shoe at Mahwah, N.J.; Ross Black is out of the service and is at 345 Montauk Avenue, New London, Conn.; Harry Corman is out of the Army and is at 383 Beacon Street, Boston 16; Christian Febiger, also out, is at Little Compton, R.I.; Charles N. Griffiths, at 23 Bennett Avenue, Binghamton, N.Y.; Bill Hartmann, at 83 Adams Avenue, Port Chester, N.Y.; Rupert Lewis, from the Navy, at 9 Hillside Avenue, Allerton, Mass.; Willard Marcy, at 75 Madison Avenue, Newtonville 60, Mass.; Robert Nickerson, at Campello Shank Company, Campello, Mass.; Jack Robbins at 136 Russell Road, Fanwood, N.J.; Henry Stuart, at 153 Mount Pleasant Avenue, West Orange, N.J. Some recent promotions: Doug-

las C. Davis, from major to colonel; Allen V. Hazeltine, from major to lieutenant colonel. Lieutenant Edward C. Walsh of 196 Mason Terrace, Brookline 46, Mass., reported missing in action, is now reported killed in action on December 16, 1943. Further details are not now available. — WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N.J. PHILIP H. PETERS, *Assistant Secretary*, 159 Glen Road, Wellesley Farms 82, Mass.

1938

We quote from a letter postmarked Leghorn, Italy: "The class news has been on the rather short side of the ledger lately, and probably I'm to blame as much as any of the other members of '38." Now I think that is the way we all feel, but our correspondent, Bert Grosselfinger, who is a lieutenant colonel, has done something about it — and from Italy! Bert goes on to say that after 30 months overseas, he expects to be home early in '46, perhaps by the time you read this. We all hope so.

It seems to us that now is the time for you fellows who are being rapidly discharged from service activities and settling down again to the ways of the civilian to drop us a line and bring us up to date on where you've been and what you've been up to. By way of the address change notices, we have received news of some, although in most cases it is limited strictly to the change of address. In the hope of extracting further details from the men in question and perhaps from a few of the rest of you, we are listing below these items: John Burke is now with the Cummins Diesel Engines, Inc., in Philadelphia; Eugene Hochman has moved from San Francisco to Chelsea; Tom Garber and William Purcell are now in Cambridge from Eatontown, N.J., and Silver Spring, Md., respectively; Nick Barbarossa has been discharged as a major and is now located in Minneapolis; Harry Saunders, a captain, has returned to Evanston, Ill., from somewhere in the Pacific; Tom Evans has moved from Louisville to Columbus, Ohio; Dud Levick from Milan, Tenn., to Jenkinstown, and Fred Klauk from Princeton to Wilmington, Del. John Iglauer has transferred from Washington to Ann Arbor.

Allan Schorsch called us the other day to report that he has left the navy lieutenantancy and is now back with the United Merchants and Manufacturers Association in the textile trade. Allan also advised that Harold James is out of the Navy and has resumed the practice of law in New York. Last summer we called on Jack Chapin's mother, and she proudly displayed Jack's latest pictures, taken at the time of his marriage in Sydney, Australia, to a native daughter of Sydney. At that time Jack had elected to stay in that country until his bride could return with him. We hope that by this time they are both in Reading — we'll find out during our next trip to Boston. Bob Treat is reported to have terminated his work in the synthetic rubber industry and is now located in Schenectady, in the General Electric plastics department. We met Bruce and Mrs. Leslie at Dr. Compton's dinner in New York early in December and find that Bruce works just around the corner in the Graybar Building with Firemen's Mutual Insurance Company. The good news of Major Archer

Thompson's return from the Philippines after more than three years in the service was carried in the Gardner, Mass., *News* in December. He went overseas a year ago after graduating from the General Staff School and spending some time in Fort Belvoir, Virginia. Before entering the Army, he was with the Liberty Mutual Insurance Company in Philadelphia.

This month we have word of quite a few engagements. Wilbur Rice became engaged to Jeanne Butler of Glens Falls, N.Y., in October. Will was a major in the Army Air Forces then. Virgil Hall is engaged to Katherine Besseliou of Savannah, Ga. Virgil is working down there, as superintendent of machinery at the Savannah Machine and Foundry Company. In November, Merrill Tolman became engaged to Lieutenant Ruth Jagger, Army Nurse Corps, of New Haven, Conn. Merrill is a lieutenant in the Marine Air Corps and wears the Bronze Star and Purple Heart for service in England, France, and Germany. Tom O'Brien is engaged to Helen Buckley of Brighton, Mass., and is working for the Navy Department. Ralph Slutz became engaged at Christmastime to Margaret Mitchell of Maplewood, N.J. Ralph was connected with the Office of Scientific Research and Development during the war and at present is completing work for his Ph.D. at Princeton. Another December engagement was that of Norm Bedford to Hilda Lea of Hingham, Mass. Norm is connected with the Beckwith Elevator Company of Boston. Last October, George Stansfield was married to Ann Hill of Alexandria, Va. George is assistant archivist at the National Archives in Washington.

For more news of the boys in the service, Bronald Vasalle has been released from the Navy after 40 months. He served in the Pacific theater, and his last duty was aboard a landing ship for tanks. He was a lieutenant at the time of his release. Francis McMorron, a colonel, has been assigned as air ordnance officer of General George Kenney's Far East Air Forces headquarters in the Philippines. He formerly held the same position with the Seventh Air Force in Hawaii, Saipan, and Okinawa. Donald G. Mitchell, a major, has been awarded the Bronze Star for meritorious service in connection with military operations against an enemy of the United States. As supply officer for an important staging area during and before the invasion of the Continent, Major Mitchell was instrumental in expediting the supply and equipping of units and reinforcements staging in the assembly area. He is now attached to the Army Ground Division, United States Group, Control Council for Germany in Berlin.

Charlie Maak is working for the Menasco Manufacturing Company in Los Angeles, where he is supervisor of metallurgical development. — Well, let's hear from you — we shall continue publishing the rather uninformative address changes as above until we get more details. (Apologies to the boys who happen to hear their names listed — we're not picking on you, but we had to start somewhere!) — DALE F. MORGAN, *General Secretary*, Carbide and Carbon Chemicals Corporation, 30 East 42d Street, New York, N. Y. ALBERT O. WILSON, Jr., *Assistant Secretary*, 32 Bertwell Road, Lexington 73, Mass.

1939

This month we experienced the rare occasion of a letter with news for the column. Fred Cooke writes as follows: "I have been pretty much out of touch with the good old Class of 1939 for quite a while now, and other than what I hear from such faithful informants as Bob Saunders, have practically no information on what the boys are up to. . . . He's now in Denver at the Army's Ordnance plant there, helping close out contracts. . . . Bob also reported that Woody Baldwin, who was with him in the Ammunition Inspection Field Office in St. Louis, is down in Amarillo, Texas, doing the same thing. . . . My outfit, the office of the director, Eastern Pacific Division, Bureau of Yards and Docks, was charged with co-ordinating the flow of construction equipment, material, and spare parts which went into the advance base program. It was a fine spot from which to see what was going on, and after I got used to the never-ending volume of paper which was involved in my job as shipping officer, I found the work quite absorbing. I was fortunate in having an opportunity to do a bit of traveling; my most extensive trip was a sort of 'Cooke's Tour' which took me out to Leyte and Samar last spring. While at Guam on the way out, I learned that Jim Laubach's ship, the *Windham Bay*, was in port and after considerable connivance managed to get a boat ride out to where she was anchored. I no sooner got aboard than Jim told me they were getting under way in half an hour, news which resulted in my spending only a few minutes with him. He'd grown himself a brush over his upper lip and appeared to be quite the sea dog. At present I'm attached to the Western Sea Frontier — a very little frog in a large pond. My little, however, does sound impressive — for example, Officer in Charge of the Bureau of Yards and Docks Material Section of the Requisition Control Unit in the General Supply Branch of the Overseas Supply Logistics Control Division of the Logistics Department of the Staff of the Commander, Western Sea Frontier. And that's a mouthful. Actually, there's not very much doing these days, since most of the bases are more concerned with surplus material than with ordering shipments from the States."

Riding as an observer on the latest record west-to-east B-29 flight of December 11, was John Alexander who has been specializing in "29's" for some time past; he is, of course, employed by Boeing in Seattle. Johnny's main extracurricular interest at present seems to consist of skiing. — A personal item sent to the Institute concerning Burns Magruder reads as follows: "Major L. B. Magruder, Jr., is on terminal leave from the Army and is now with the central engineering department of the Du Pont Company, stationed at the plastics department in Arlington, N.J."

The Boston *Post* reports the engagement of Henry A. Kettendorf, a lieutenant commander, to Cornelia Sullivan. Ket is at present attached to the office of the supervisor of shipbuilding in New York City. After leaving the Institute, he attended postgraduate school at Annapolis, Md. Also, we learn of the engagement of Felix L. French to Kathryn Therese Fair of

Natick, Mass. Felix has served four years with the Royal Canadian Air Force. A recently received wedding invitation tells of the marriage of John I. Herlihy, an Army captain, to Marie Lucille Hanley. The affair took place in Chicago on January 5. Our last romantic note concerns another wedding, that of Kenneth E. Madson, an Army colonel, to Evelyn L. Cahill of Greenwich, Conn., and Pebble Beach, Calif. Until recently, Ken has seen service in the Caribbean-South America and China-Burma-India theaters of war. He is now stationed in Washington as engineer commissioner for the District of Columbia. The wedding took place on December 14.

The following excerpts from an article in the Buffalo, N.Y., *News* provide food for thought: "What keeps a man alive during three years in Jap prison camps where his captors systematically starve him, while his weight dwindles from 140 to 106 pounds and he grows progressively weaker? 'The grim will to live,' says Lieut. Albert Heath Chestnut, . . . survivor of the infamous Death March from Bataan to Camp O'Donnell. 'Over and over, we kept saying to ourselves: 'Whatever happens, I'm going to be here when the Yanks and tanks get here,' " he explained. 'You talk about food all day long, and you dream about food at night. It's the one thing you think about. I used to like to go to bed because I could dream about food. You see, I was one of the lucky ones. Most of the fellows dreamed about steaks and ice cream and things like that, but just as they were reaching for them, they would wake up. I didn't. I always got a chance to eat in my dreams.'

"Serving with the 200th Coast Artillery, anti-aircraft, when Bataan fell, Lieut. Chestnut lived on one meal a day and walked four miles to get it. On the Death March, from April 10 to 17, 1942, he was given one handful of rice. 'I cut down a banana tree with my penknife,' the former mining engineer recalls, 'and ate the soft heart of the tree. Some of the fellows used to slip into the sugar cane fields and eat the canes. The Japs would fire into the canes, but I don't think they got many of them.'

"From Camp O'Donnell, where more than 1,200 Americans died in two months, Lieut. Chestnut was taken to Cabanatuan, where men died so rapidly it became a problem to get anyone strong enough to dig mass graves. Then, jammed tightly in the hold of a ship, he was taken to the Port of Moji and thence by train to Tamagawa Camp near Osaka. The prisoners wore only tropical clothing, thin cotton trousers, shirts and jackets given them in Camp O'Donnell, and Tamagawa weather was as cold as that of Buffalo in winter.

"Last June, American officers from Camp Zentsuji were moved to Camp Rokuroshi in the mountains on the west side of Honshu Island. Four days after they left, B-29's blew up Camp Zentsuji. 'Rokuroshi was mighty bad,' the lieutenant recalled. 'They tried to get as much work out of us as possible before we starved to death. On Aug. 17 they stopped all work, but the two days before that were bad. They took some of our officers down to headquarters and the Jap commander pointed to a newspaper and screamed: "Your people are using inhuman weapon." On August 22 they told

us the war was over. On Sept. 9, the liberation team arrived — nurses, doctors, photographers and clerks'. . . . A reserve officer [Lieut. Chestnut] was called to active duty in May, 1941, while employed as a mining engineer in Morenci, Ariz. He was wounded by the first bomb dropped at Clark Field, Manila, shortly before he was captured and is now assigned to Rhoads General Hospital, Utica, N.Y., pending discharge." — STUART PAIGE, *General Secretary*, 336 Brookbend Road, Fairfield, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 271 Cypress Street, Newton Center 59, Mass.

1941

We regret to report additional deaths as a result of the war which has ended. Milton C. Reeves, II, a lieutenant in Field Artillery, was killed on November 23, 1943, according to a note received from his father. Hugh M. Branham, a lieutenant in the Army Air Forces, was killed on November 7 in an airplane accident at Guam, according to word received from the War Department by his parents, Captain Hugh Branham, U.S.N., retired, and Mrs. Branham. We quote in its entirety a letter received by the Alumni Association from Philip Fresia, who therein reports the death of Harry Whitman on December 15, 1944, and expresses about Harry what we feel about each one of our classmates who has lost his life in the war.

He writes as follows: "I have enclosed a copy of a newspaper article from the Grand Rapids *Press*, concerning my classmate, Harry Gill Whitman, Jr. His mother, with whom I have corresponded regularly during the past three years, sent it several weeks ago. After learning that Bud was a prisoner of war in the Philippines, I began sending him notes occasionally, these being limited to 25 words each. Apparently letters from prisoners of war were so restricted by the Japanese military that I was able to get word of him only by means of the few printed cards he was permitted to send his parents. Shortly after the liberation of the captives at Bilibid, I obtained some personal information about Harry when I visited an Army captain who had known him in prisoner-of-war Camp No. 4 near Nichols Field, Luzon, and who was at the time of my visit recuperating at Dibble General Hospital in Menlo Park, Calif.

"After the fall of Bataan, Harry had been transferred to a camp not far from Nichols Field and was compelled to labor in the construction of an airfield adjacent to Nichols. The main building of the camp had once been a schoolhouse, and the establishment was one of the few under the jurisdiction of the Japanese Navy. Imperial marines of limited-service rating were provided as guards, and the tough administrator in charge had formerly been a warden of a civilian prison in the home islands. He was frequently severe to the prisoners, often refusing delivery of prisoner-of-war mail and permitting his guards to break into the American Red Cross packages, few as they were. The work required of the men was hard and the hours long, most of the construction being done by hand. On the road to and from the airfield the prisoners were able to get news from the natives, and, as this army officer informed me, it is amazing how well the men of Prison Camp No. 4 were able to

keep abreast of the news of our progress in the Pacific war.

"And then, to Harry Whitman came this tragic end in Subic Bay, after the long period of suffering and waiting for liberation. I have written to give the Alumni Association this information for its records of the Technology men who lost their lives in the recent world conflict. We, the Alumni of M.I.T., I am sure, will never forget the sacrifices made by these brave men who were called and paid so dearly."

— STANLEY BACKER, *General Secretary*, Philadelphia Quartermaster Depot, 2800 South 20th Street, Philadelphia 45, Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

1942

At least one of the members of our Class has been taking advantage of the American University program that the Army is running in Europe. Joe McHugh was enrolled among some 4,000 soldier students at the Shrivensham American University. One of the fellows who has been working around the Institute during the war has gone to work for Eastman Kodak, namely, Pete Hellige. Pete joins Charlie Prohaska, who also recently went to work for Eastman. Dave Cavanaugh is out of the Navy and in the process of beginning work with the Saco-Lowell shops as a civil engineer. During his stay in the Navy, Dave contributed much to the construction work on many of the Pacific Islands on the way to Tokyo. Dave is married and the father of a five-months old daughter, Ann. At present, the Cavanaughs are living in Saco, Maine.

Word arrives that Court Crocker is now a married man. His wife is the former Nancy Ballou. There doesn't seem to be any date attached to our information, but the wedding took place in Salem. At last some news of George Tucker! George was just entering the Navy and beginning his career at Notre Dame, to be followed by a short trip through Radar School, when last we heard. All the evidence now points to the fact that he is a lieutenant and has recently become engaged to Frances Barker of Gulph Mills, Pa. Some months ago we announced the engagement of Frank Herlihy to Kathleen Donovan. Since then, the couple has been married in St. Thomas Aquinas Church on the outskirts of Boston. According to such information as we have, after their honeymoon the couple will be living in Suffern, N.Y. In Brooklyn, John Hinchman was married to Catharine Sellew on December 8 in the Episcopal Church of the Holy Trinity. John is now on terminal leave, after having served 40 months with

an engineer maintenance company in Europe. Al Dengler will also soon be married. He has been overseas with the 90th Infantry Division and plans to be married sometime this month. His wife-to-be has been taking his place at the Institute by working for the Radiation Laboratory during the War. She is Marijeanne Scullin of Newton Center. From South America, Carlos Gonzalez writes that he is to be married in May of this year. The lucky girl is Ampara Schroth. She, likewise, is from Peru. Carlos reports that he is working for the same Peruvian concern for which he worked before coming to M.I.T.

More honors accrue to our Class for participation in the war. Clyde Hayward, who has been with the Chemical Warfare Service for the last four years, has been in the European theater for about 40 months. He is now a major and received the Bronze Star for his research work in the Chemical Warfare Service.

We have at least two babies to report this month. Marvin Stein is the father of a boy, born October 23, and to be named Paul Michael. Marvin classifies him as in the Class of '66. The Steins are living at 4 Lincoln Gardens, Elberon, N.J. Your Secretary is contributing the second baby — a little girl named Susan Scott. Inspection cordially invited!

Recent visitors to the Institute from our Class have been numerous. Donn Barber dropped in for a short call and wouldn't say much about himself, but reports that the Hank Hendersons are living in Philadelphia and that Hank is working for Budd. Donn is still in uniform but appears to be on terminal leave. One of our many visitors has also reported that Baresel was until recently located in Fort Monroe, where he has been throughout the war. He is married and has a 17-months-old baby boy. Henry Lemaire dropped in out of nowhere the other day. He, also, is on terminal leave and is trying to decide to which school he wishes to donate his talents — M.I.T. or Cal Tech. Frank Seeley, looking the same as ever, wormed his way "back to Tech" on a two- or three-day pass and is beginning to get the urge to get out of the Navy. Needless to say, the Navy is dangling all sorts of gold braid in front of Frank's nose to try to keep him in. From various sources, we have heard that Frank is quite a prolific member of the Class, and he himself corroborates these reports with the statement that he and his better half now have two children. George Saathoff, although not seen at the Institute, is definitely in the vicinity of Boston, since we ran across him on the dear old Boston

Elevated a week or so ago. He is still in Navy blue, adorned by two gold stripes, and at present working mostly at 150 Causeway Street. Ed O'Brien, Bill Wise, and Ed Thode are actually enrolled as students at M.I.T. for one reason or another. Earle Foote is likewise reported to be at the Institute once again, although he hasn't been very much in evidence. Previous reports located him in the Marine Corps. All of which goes to prove that Technology is growing no smaller with time. Jack Arend is on terminal leave and made us a reasonably lengthy call a few days ago. His experiences on the B-29 "milk run to Japan" are of considerable interest. He looks as though he had put on considerable weight but swears he hasn't gained a pound. From what he says, Jack must have had some interesting times shortly after the Japanese capitulation, when his was one of the first planes to land on Japan's northernmost islands before any regular occupation troops had arrived. — S. YOUNG TYREE, JR., *Assistant Secretary*, Room 2-215, M.I.T., Cambridge 39, Mass.

1945 (10-44)

There is not much news on hand of the members of the Class still in the service, but all that is here is good. Frank E. Gup-till now has the rank of aviation radioman, second class, after service during the latter months of the war on the carrier *Essex* attached to the famous Task Force 58. Frank was shot down last April 7 and spent 24 hours in a rubber life raft before being picked up by a submarine. He was awarded the Distinguished Flying Cross, Air Medal, and Purple Heart after participation in 23 missions. Good work, Frank!

Many of our former apprentice seamen are doing good jobs with the Navy in the Pacific area. Wilbur Peters and Walter Gray are on duty at Guam, with numerous others stationed at other important bases. Clinton Murchison recently received his commission in the Marine Corps, and has been assigned to field artillery school for further training.

On the lighter side, we note the imminent loss of two more bachelor members of the Class. John W. Matthews, an ensign, will marry Martha Allen of Peabody, Mass., in the near future, and Raymond Jerome has become engaged to Gloria Bockert of Cranston, R.I. — JAMES S. MULHOLLAND, JR., *General Secretary*, 1172 77th Street, Brooklyn, N.Y. *Assistant Secretaries*: RODERICK L. HARRIS, 1 Winchester Street, Brookline 46, Mass.; JAMES B. ANGELL, 530 Beacon Street, Boston 15, Mass.

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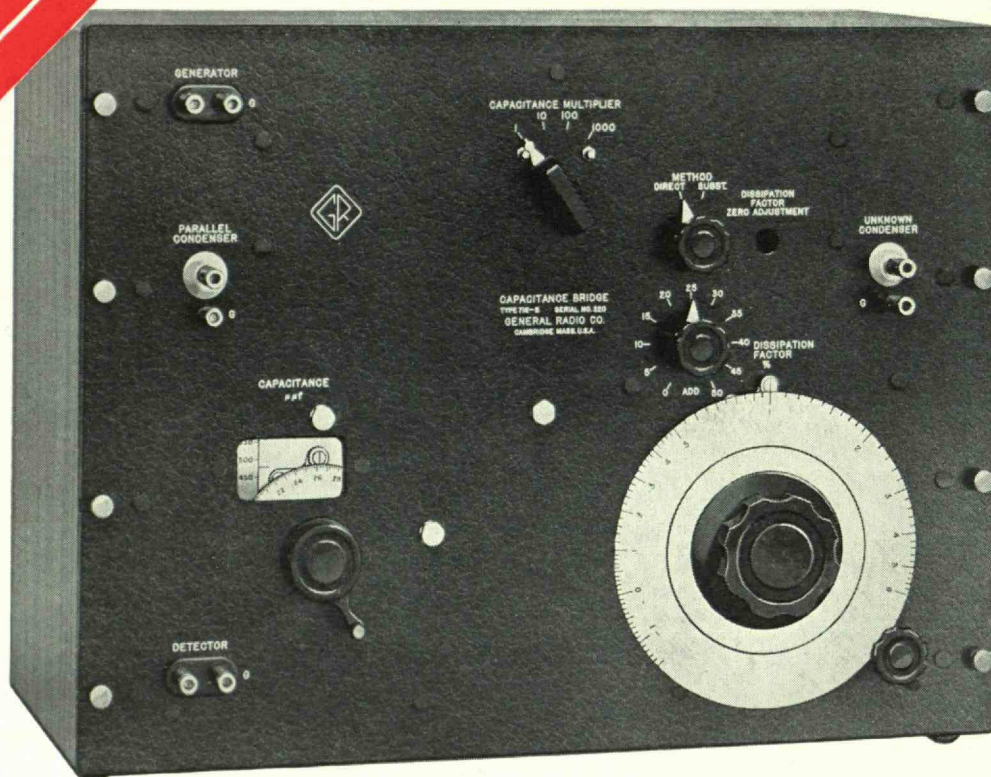
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DIRECT-READING Capacitance Bridge



FOR THE MEASUREMENT of capacitance and dissipation factor this direct-reading bridge is finding wide application for such determinations as dielectric constant, phase angle, power factor, loss factor and other dielectric properties of insulating materials and changes in these properties with factors such as temperature and humidity. For the production adjustment and testing of fixed and variable condensers it is particularly effective.

This instrument is a modified Schering bridge, direct-reading in both capacitance and power factor at 1,000 cycles. By adding an external decade resistance box, it can be converted into a series- or parallel-resistance bridge.

WIDE RANGES Direct-reading in capacitance from 100 micromicrofarads to 1 microfarad; in dissipation factor from 0.002% to 56%. Substitution method for capacitance the range is 0.1 micromicrofarad to 1,000 micromicrofarads with internal standard, and to 1 microfarad with external standard.

HIGH ACCURACY Direct-reading accuracy for capacitance is 0.2% of full scale for each range; substitution method accuracy for capacitance is $\pm 0.2\%$ or ± 2 micromicrofarads.

WIDE FREQUENCY RANGE All calibration adjustments are for the 1 kc direct-reading settings; any frequency between 60 cycles and 10 kc can be used, in which case the dissipation-factor readings are corrected by multiplying the dial readings by the frequency in kilocycles.

This bridge is suitable for practically *any* type of capacitance measurement. Because of its design, the readily accessible terminals and the simplified controls it is a very flexible and simple-to-operate instrument.

TYPE 716-BR Relay Rack Mounting . . . \$335

TYPE 716-BM Cabinet Model \$360

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